

Serial Tomotherapy

“a brief introduction”

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What is Serial Tomotherapy?

“highly conformal slice-by-slice *IMRT arc* treatment of small and large targets with superior sparing of critical structures”

Why Serial Tomotherapy?

To treat targets that require small margins,

*high dose conformality (regardless of
location, size or shape) and to
simultaneously spare critical structures.*

How Serial Tomotherapy

On your linear accelerator(s) with
add-on MIMIC binary slot
collimator and automated table
indexing system

Where Serial Tomotherapy

any solid tumor, in any location, regardless of size and complexity.

Cranial and extra-cranial IMRT

Especially useful for irregularly shaped, wrap-around, or embedded tumors that are proximal to critical structures.

Serial Tomotherapy

“flexibility built-in”

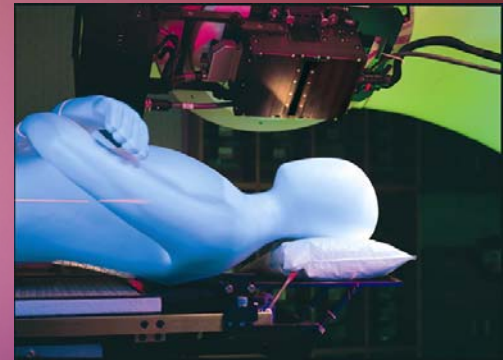
- ◆ Use the appropriate energy (6MV, 10MV, 12MV, 18MV.....) for the individual case.
- ◆ Use the appropriate “slice width” for greatest conformality, speed of treatment, and efficiency of dose delivery.

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Serial Tomotherapy

> Complete IMRT/IMRS solution:

- **MIMiC**[®] binary multileaf collimator
- **CORVUS**[®] IMRT planning system
- **AutoCrane**[®] automatic table indexing device
- **Q.A. Tools:** Localization, immobilization, and quality assurance tools



The MIMiC multileaf collimator

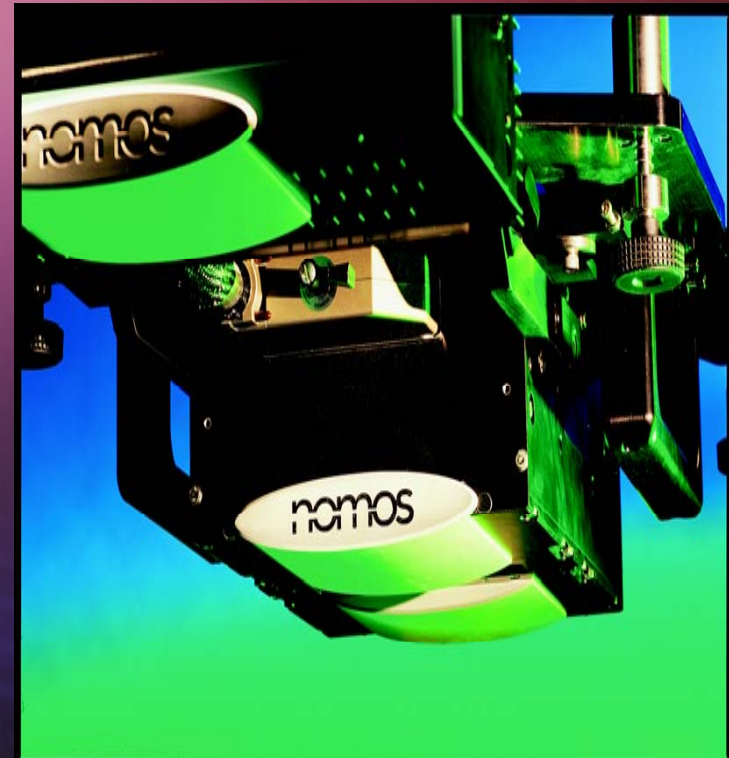


CORVUS workstation

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Technical aspects: MIMiC®

- > Binary “slot collimator” with selectable slice width
- > for greatest dose conformality of any size target
- > Adaptable to all major linear accelerators
- > **Designed to perform:**
- > Intensity Modulated Radio Therapy
- > Intensity Modulated Radio Surgery



Technical aspects: MIMiC®

- > Binary temporal modulator consisting of 2 rows of 20 leaves.
- > Each leaf is “timed” for individual attenuation

Slot width adjustable from 4mm to 4 cm

Pneumatically driven leaves, no motors to burn out.



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Technical aspects: PEACOCK®



- > Attach the BEAK® to the MIMiC to achieve fields as small as 4mm for very small lesions or Stereotactic Radio Surgery.

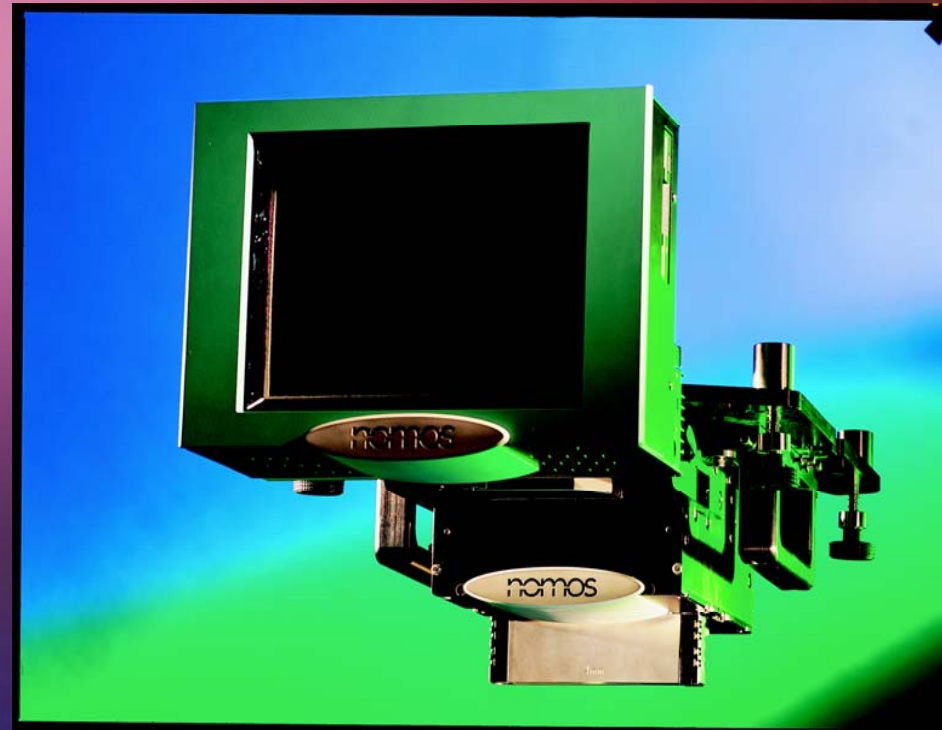
4mm small field collimator mounts on MIMiC and shapes radiation beams

NOMOS PEACOCK slide #1

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Technical aspects: MIMiC®

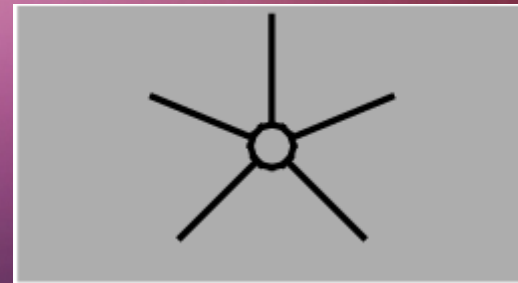
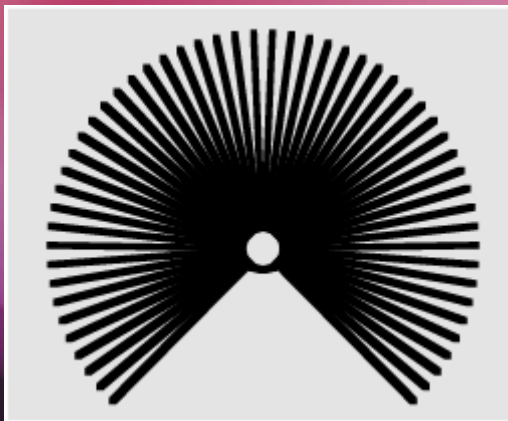
- > Totally self-contained system with micro computer/controller and Record/Verify system built-in.
- > Weight: less than 20 Kg
- > Quick mounting and dismounting for greatest treatment flexibility



NOMOS PEACOCK slide #1

MIMiC System - Functionality

Conformality – Tomotherapy vs. Step-and-Shoot MLC



A dynamic, 270 degree arc allows a new field to be shaped every 5 degrees, providing 54 fields per typical arc. Compare to MLC, static gantry, 5 field delivery.



System Information

Model: Model X-1000
Serial: SN-123456789
Firmware: v2.1.0

System Status

Power: On
Temperature: 45°C
Battery: 85%
Signal: Strong

System Settings

Language: English
Units: Metric
Timezone: UTC+01:00

System Logs

Event: System Start
Time: 2024-01-01 10:00:00
Location: Room 101

System Alerts

Warning: Low Battery
Warning: High Temperature

System Actions

Restart
Shutdown
Factory Reset

NOVOS

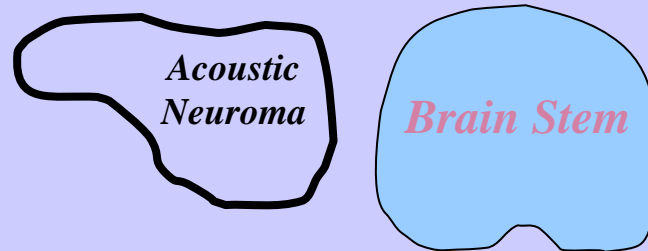
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Treatment Couch Indexing

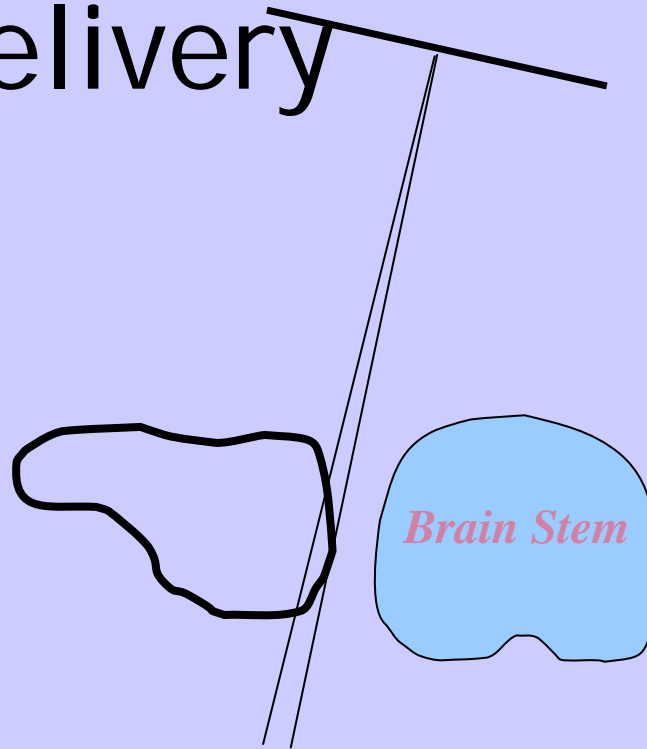
The couch is automatically advanced “slice by slice” with great precision: $<0.1\text{mm}$.

Treating small, irregular
shaped targets
tangentially with
individually attenuated
pencil beams,
simultaneously
avoiding dose to critical
structure(s).

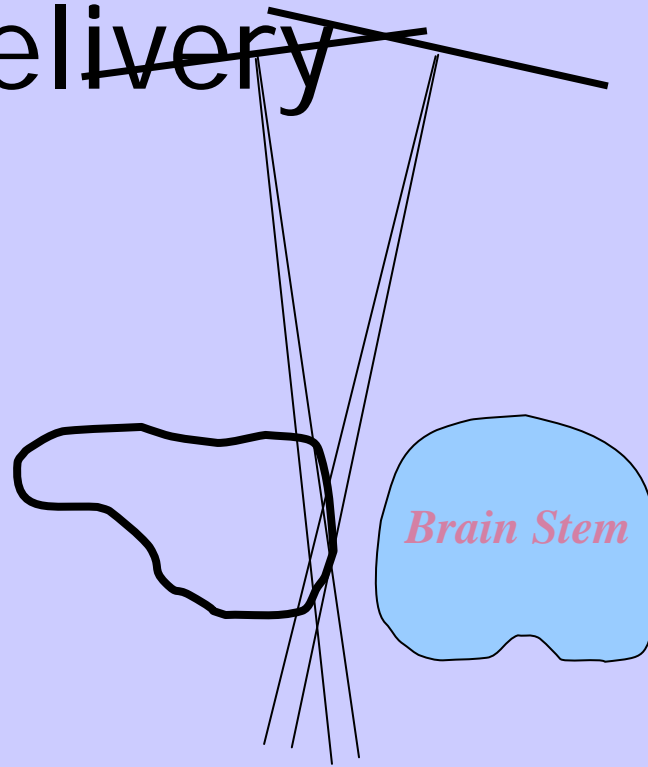
Tomotherapy Method of Delivery



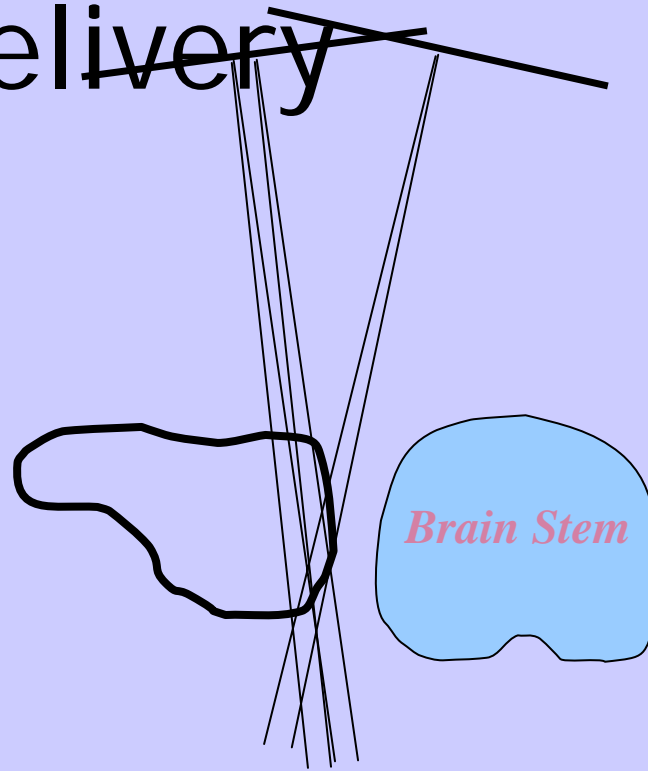
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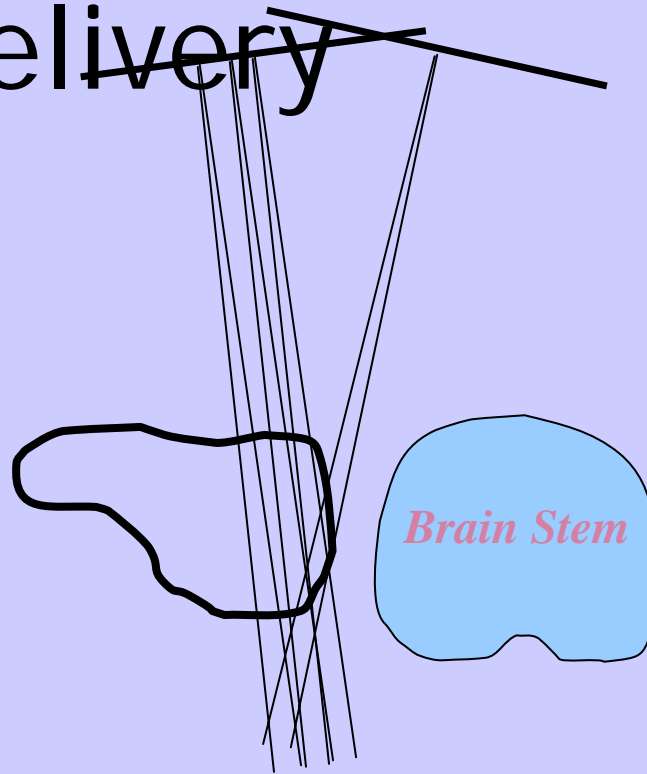
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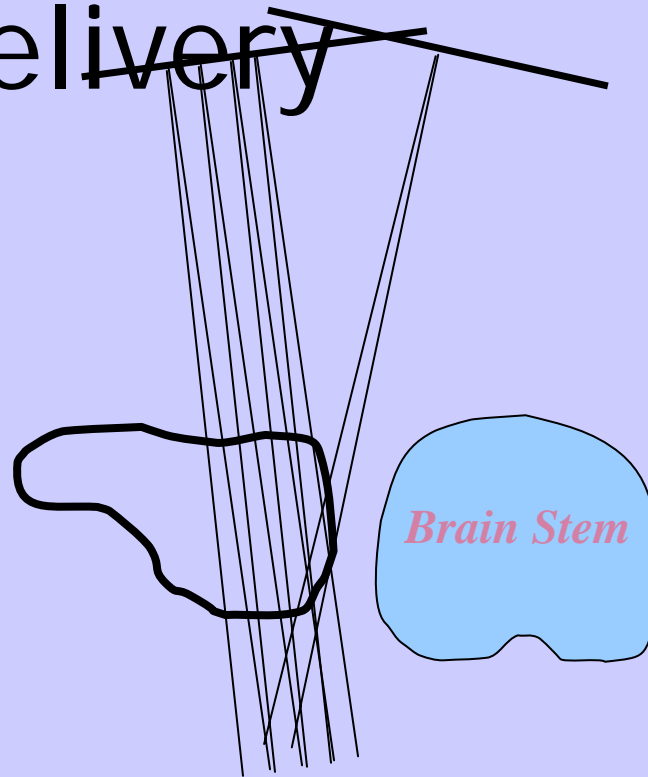
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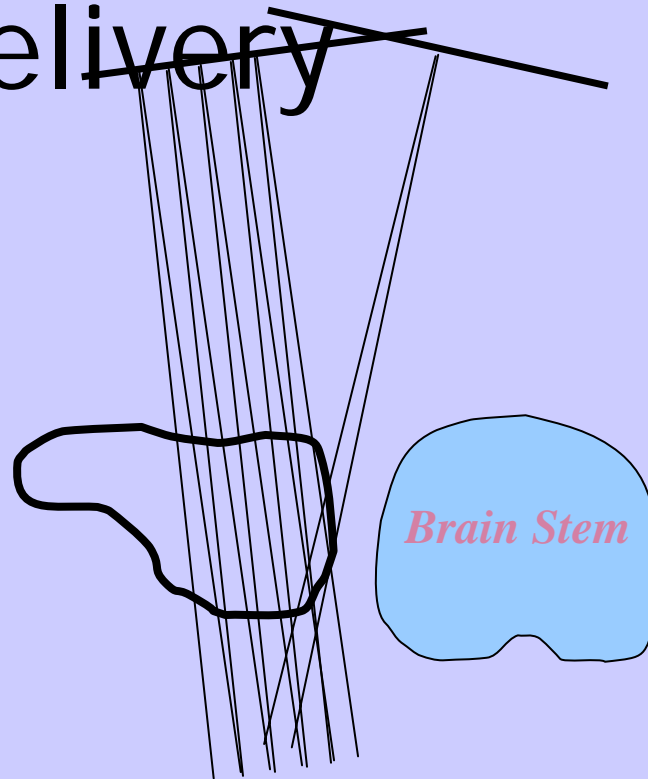
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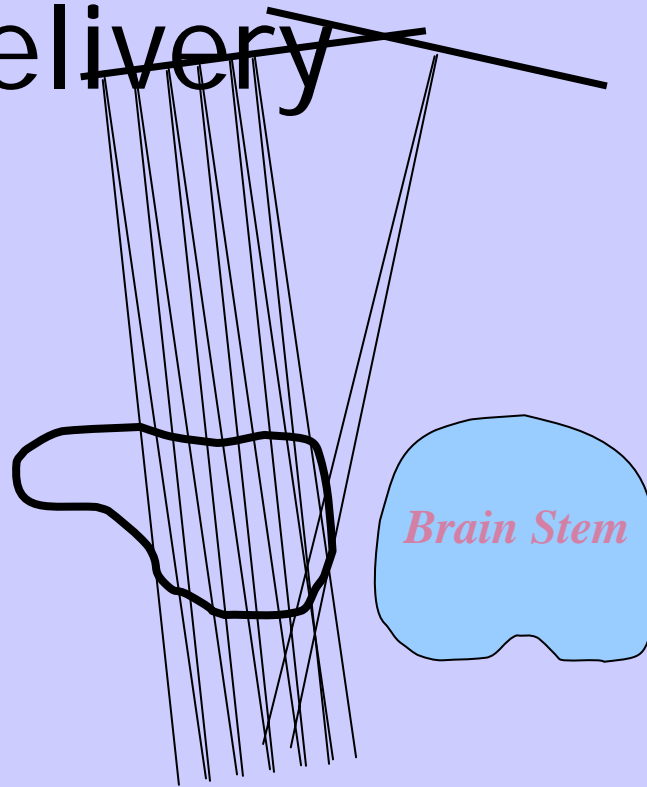
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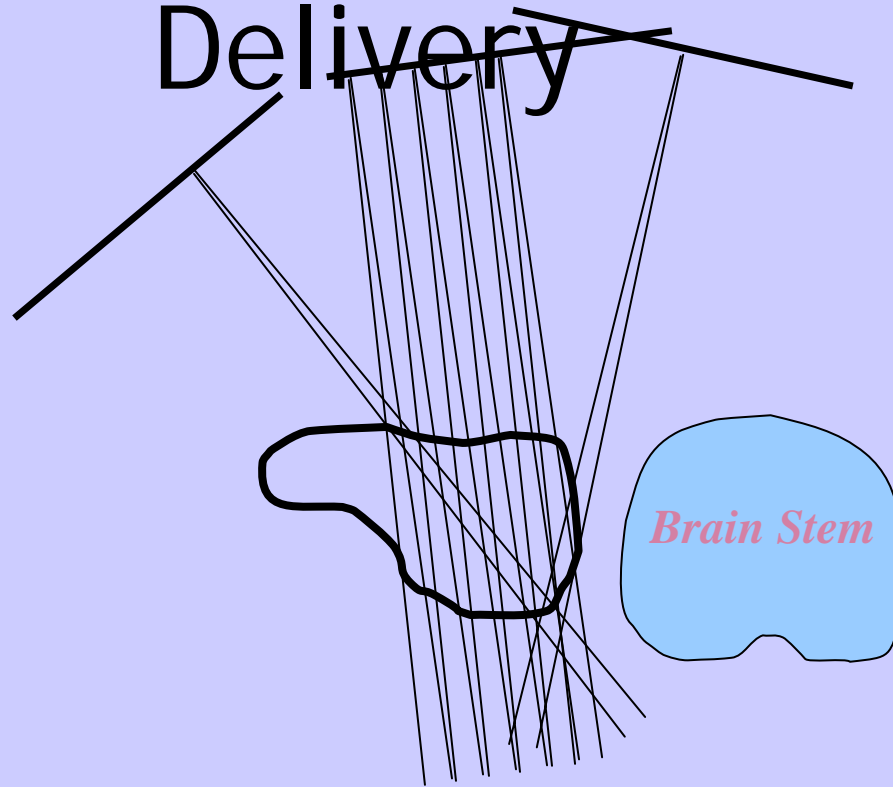
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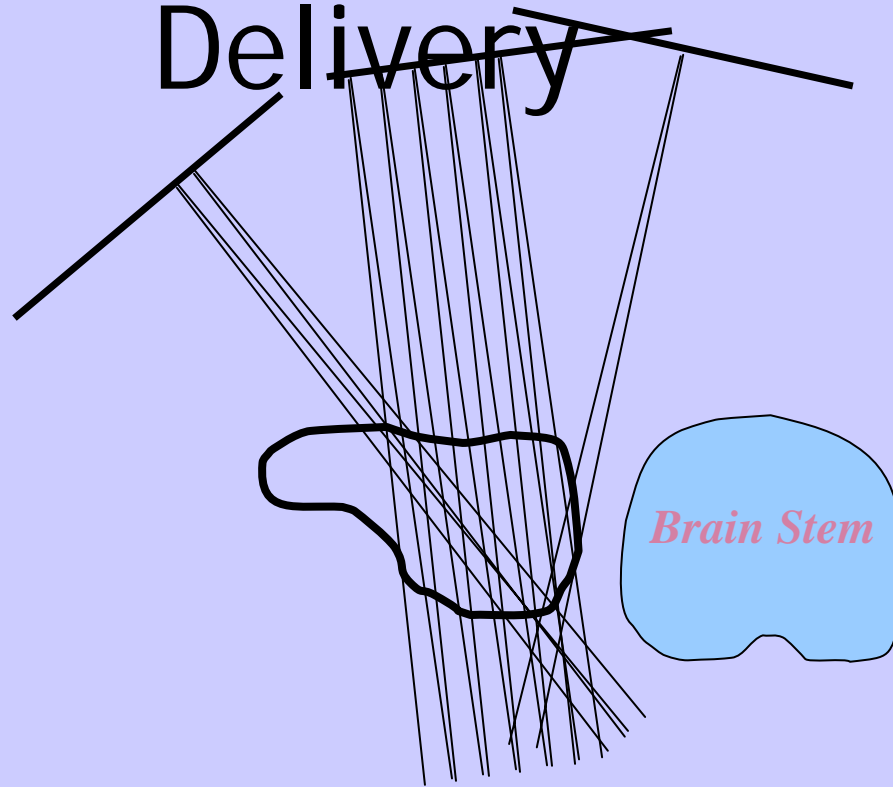
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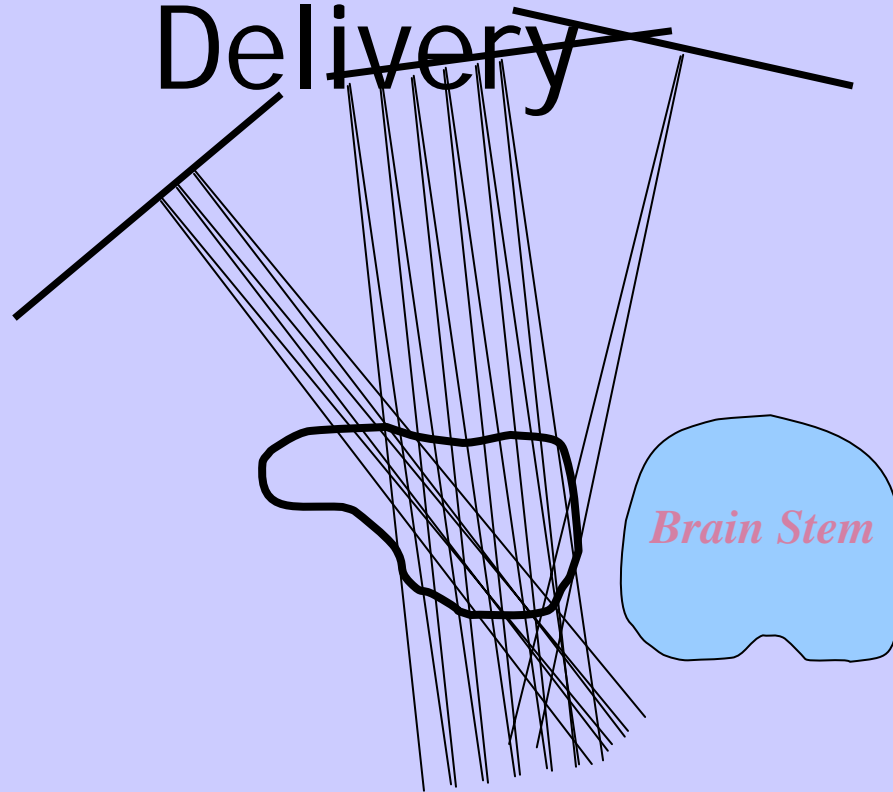
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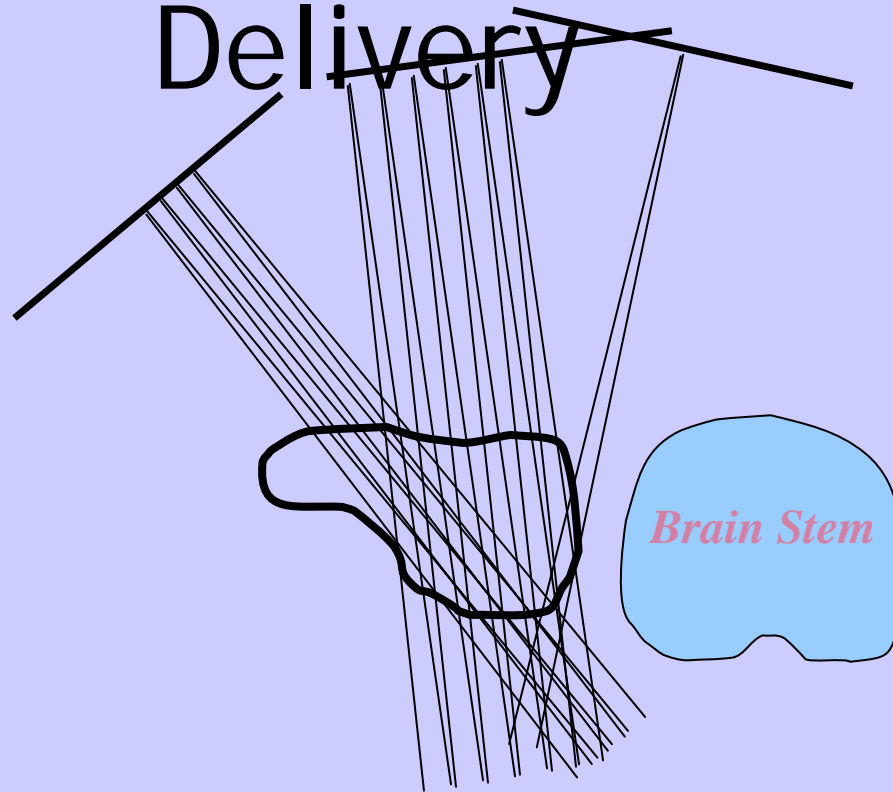
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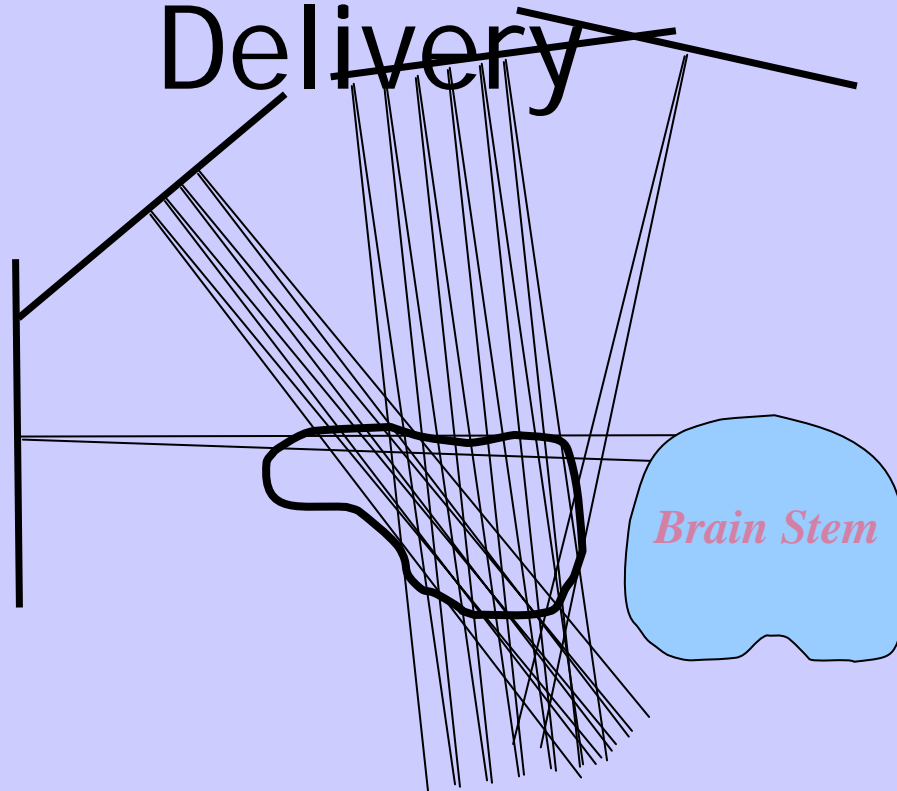
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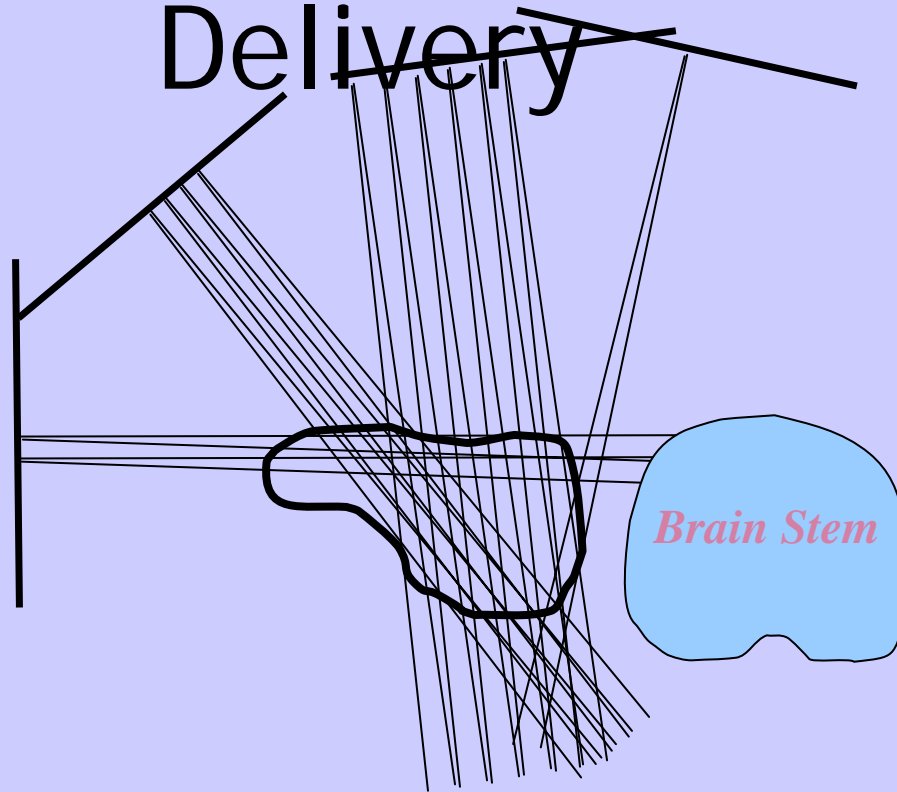
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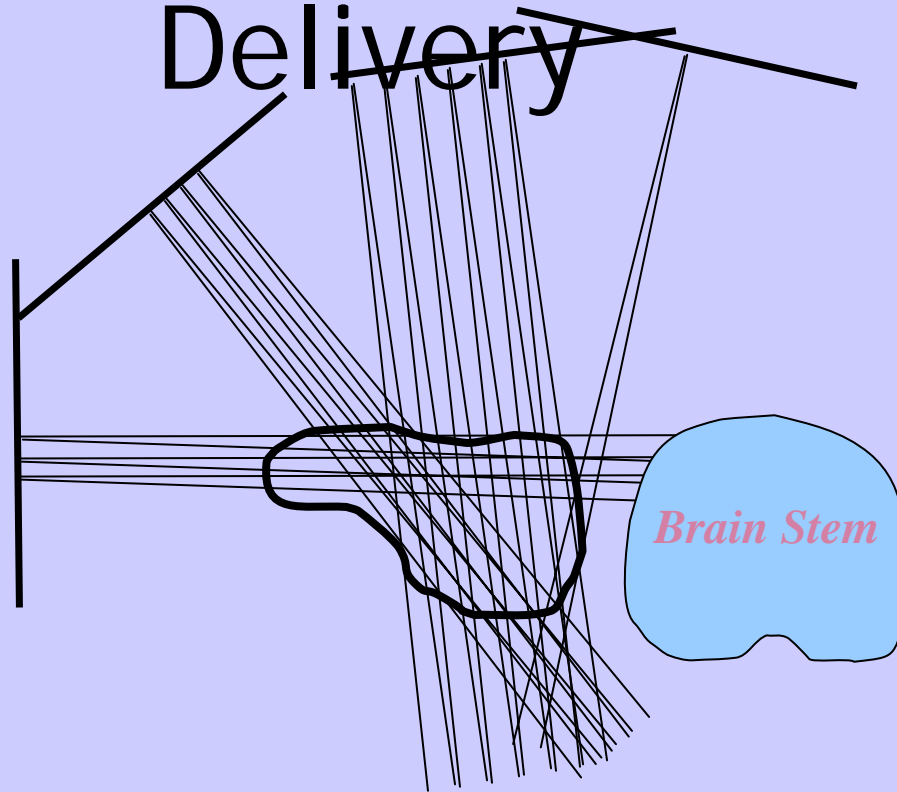
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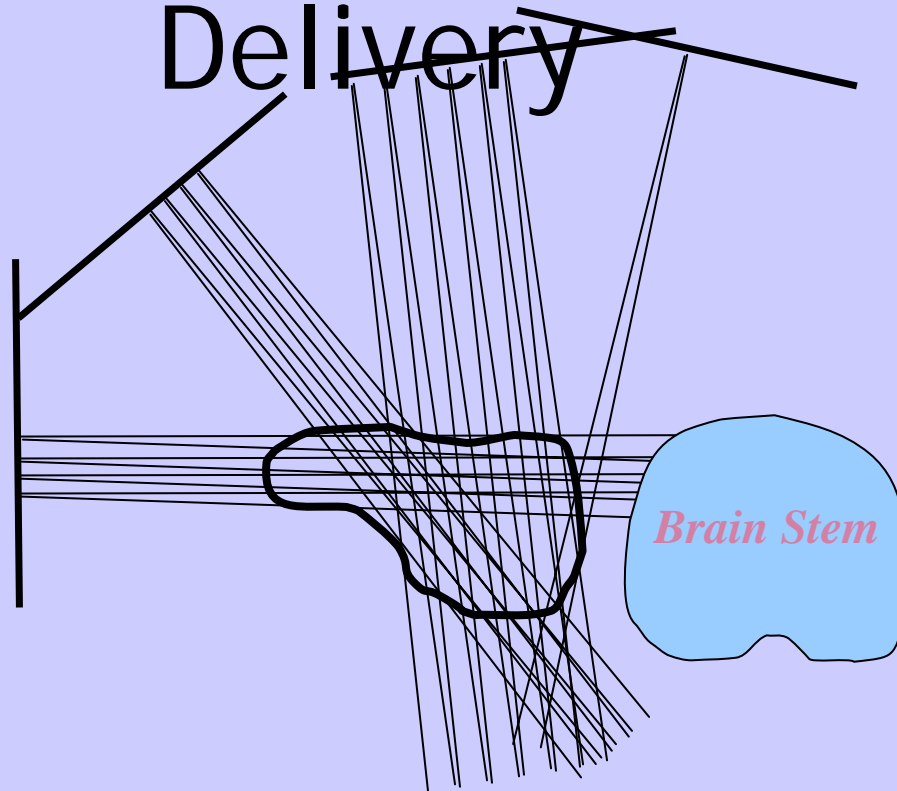
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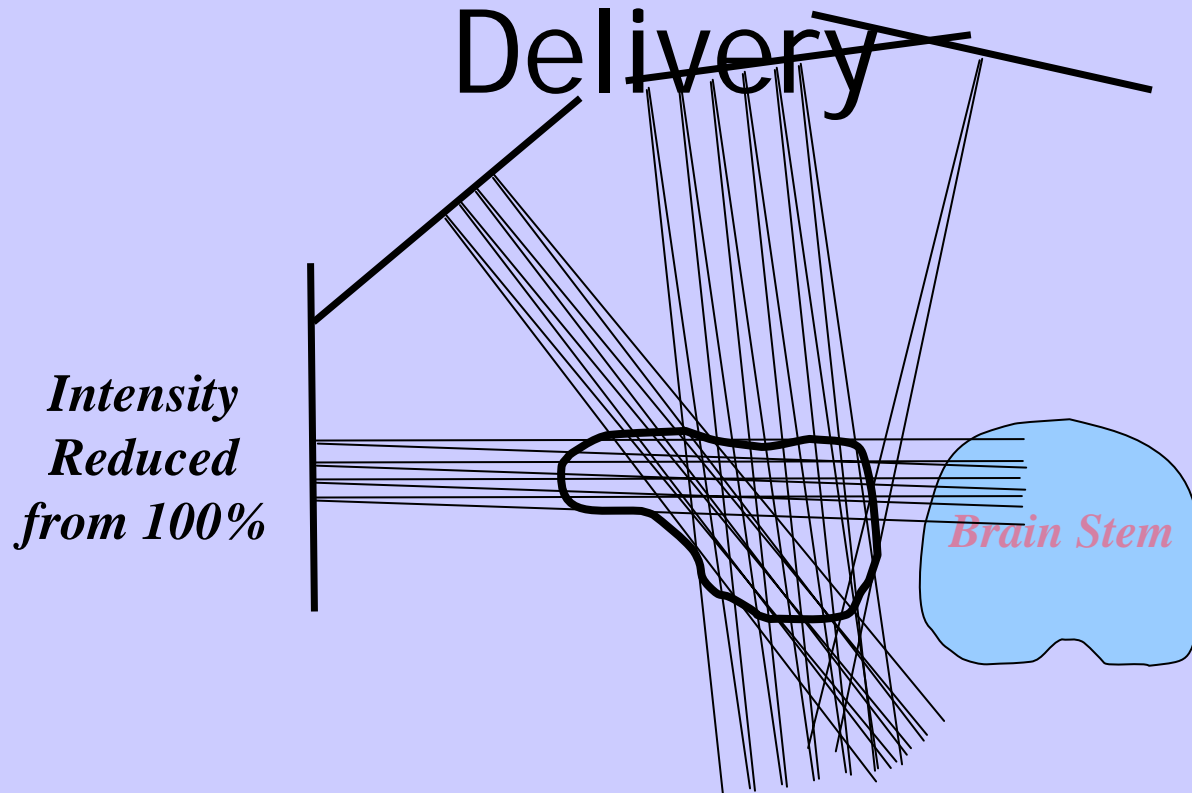
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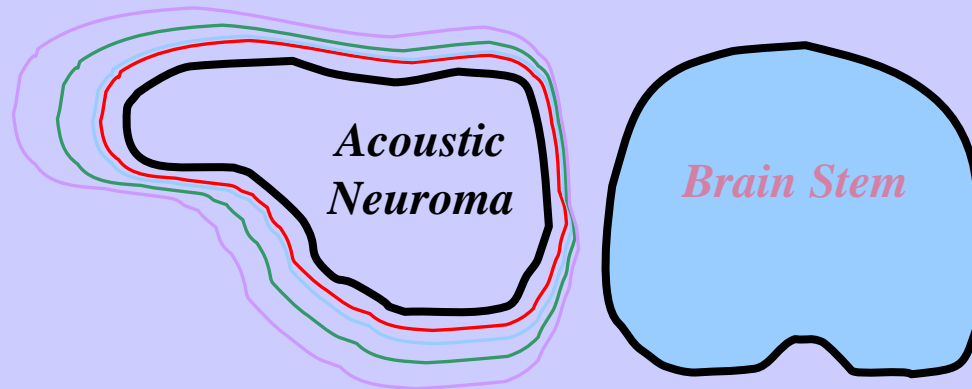
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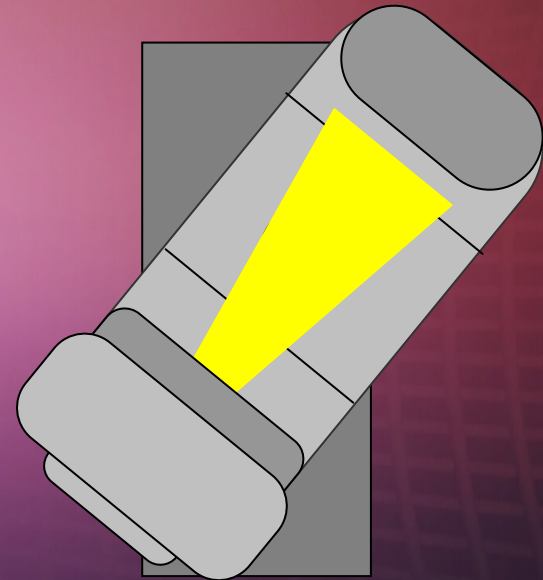
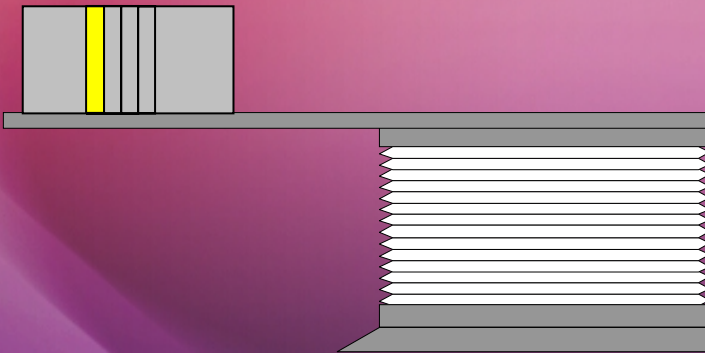
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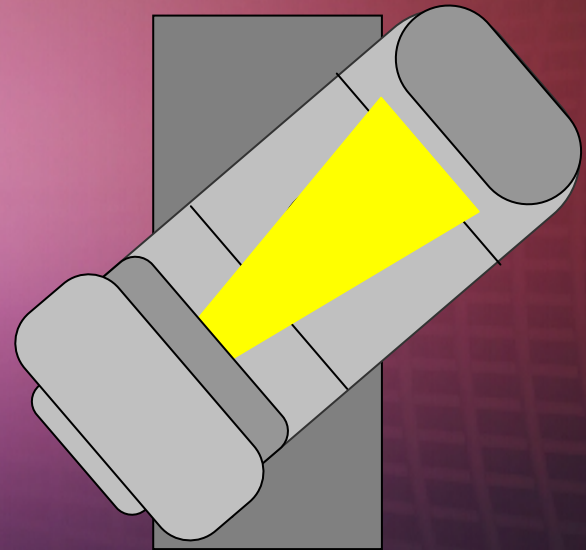
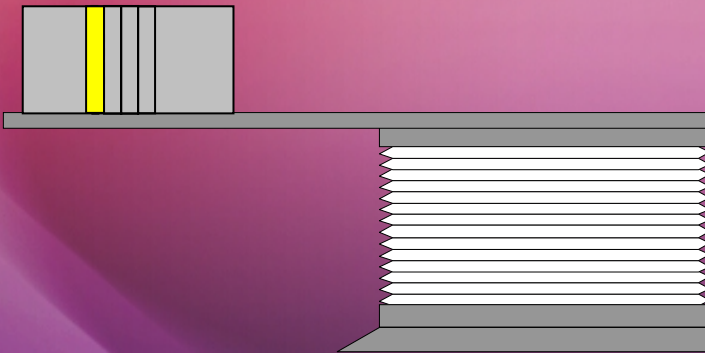
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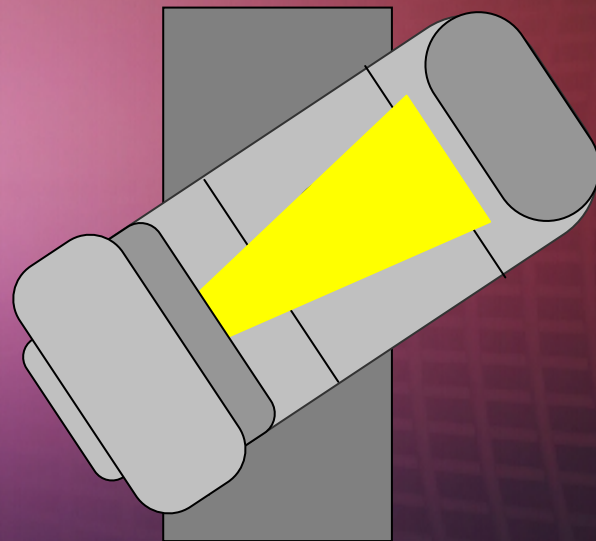
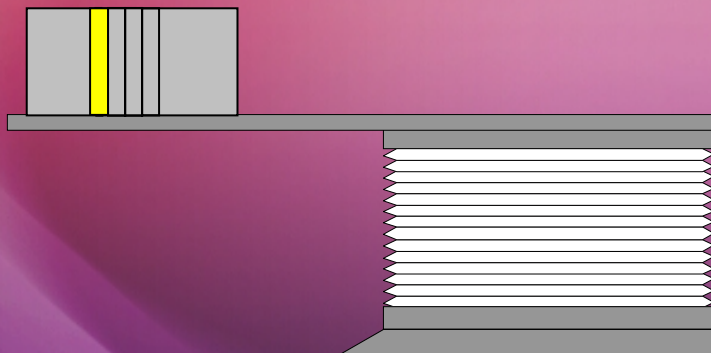
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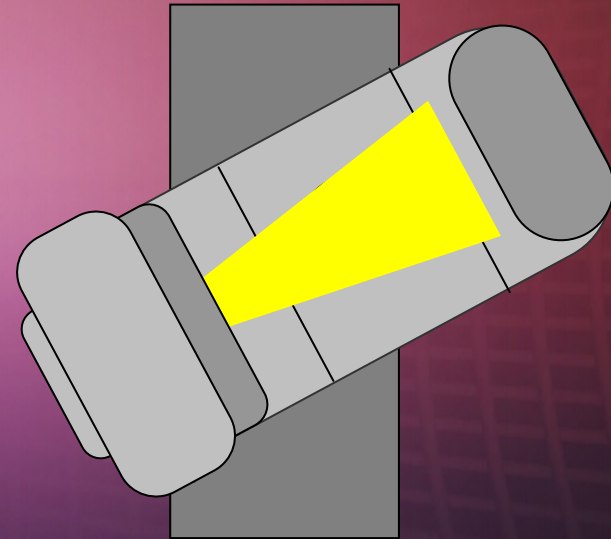
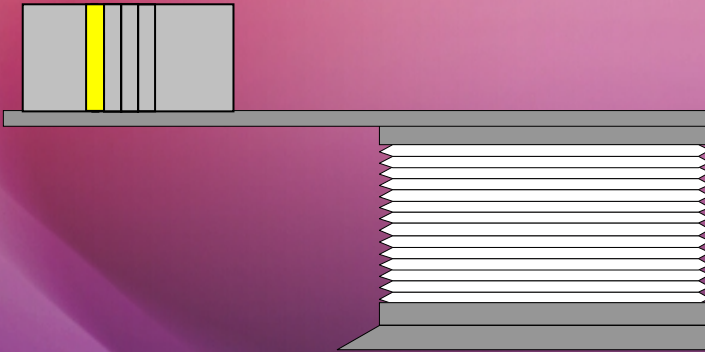
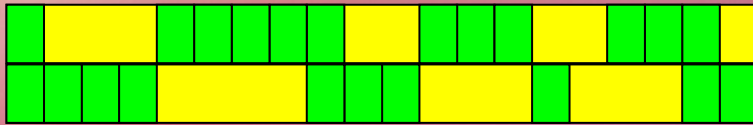
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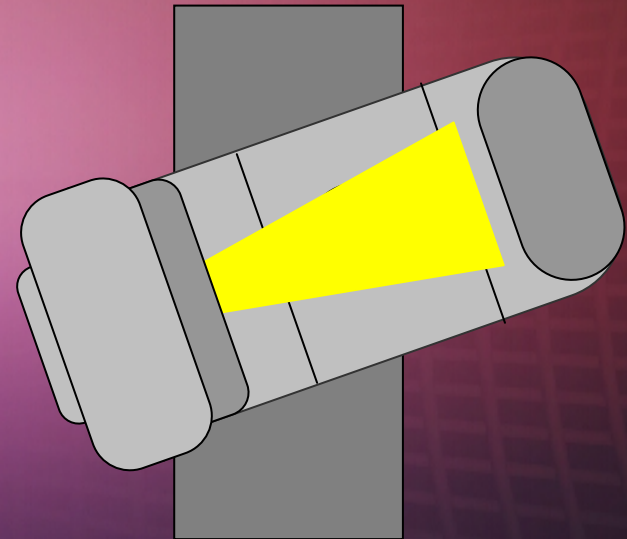
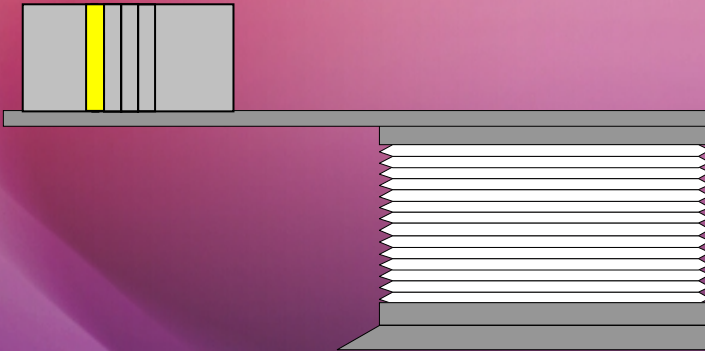
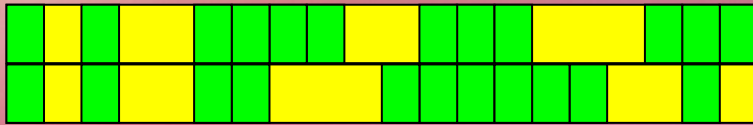
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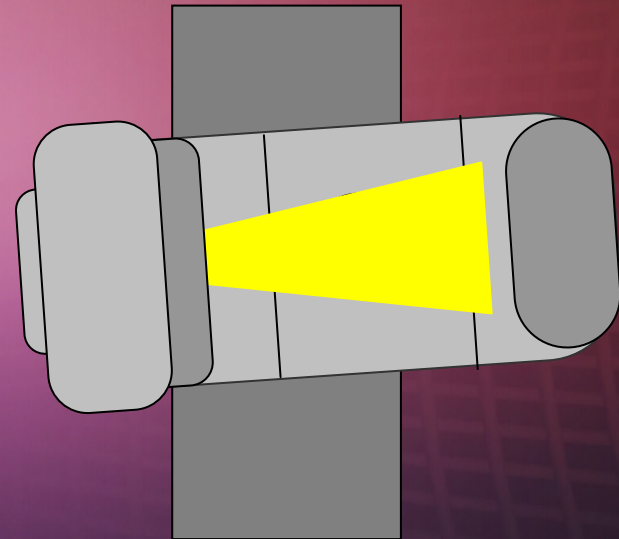
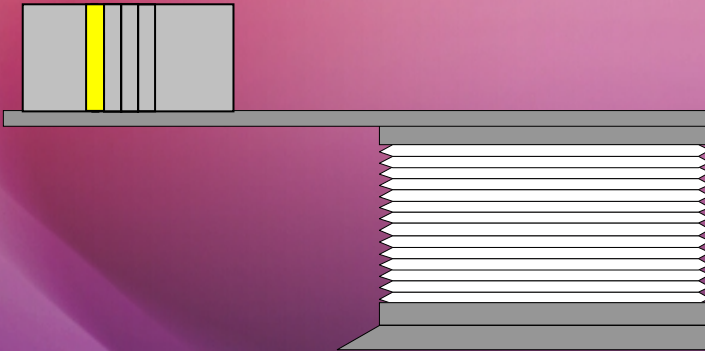
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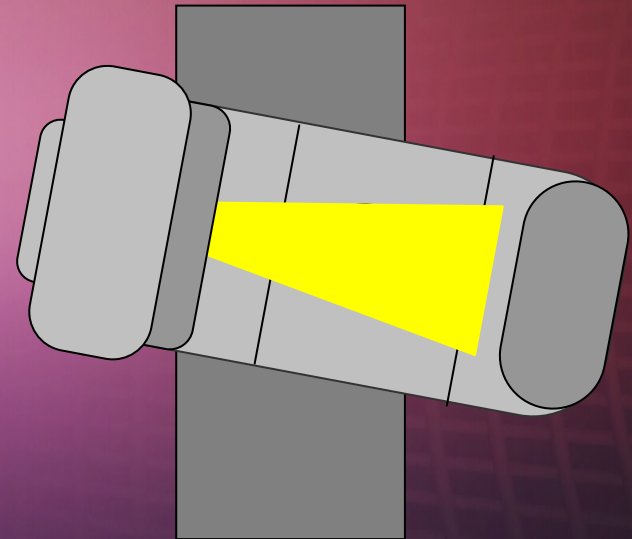
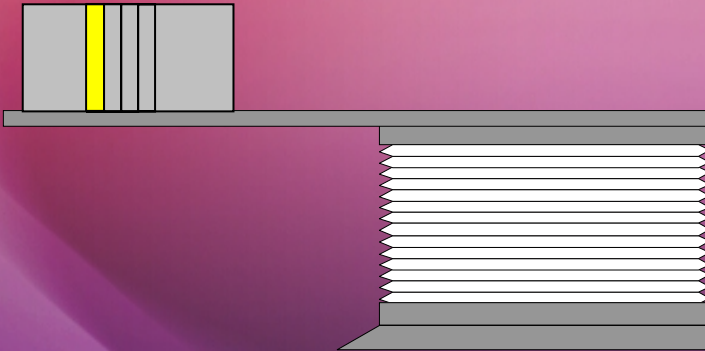
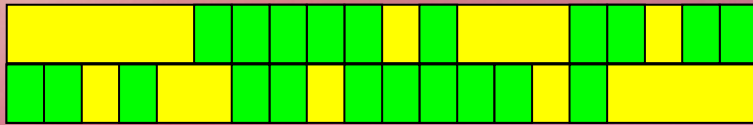
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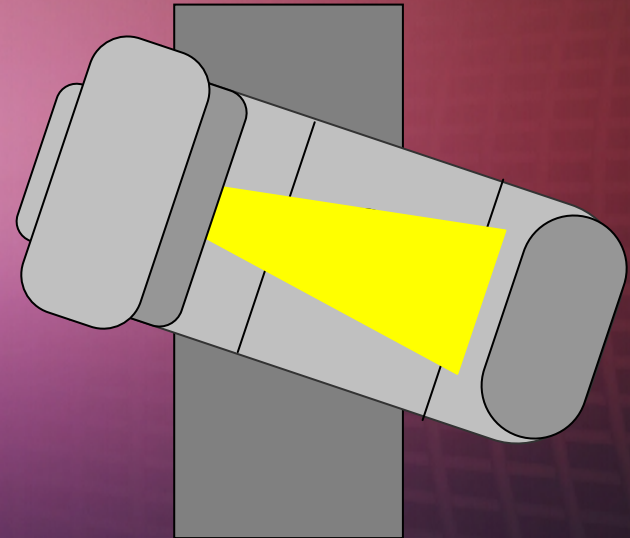
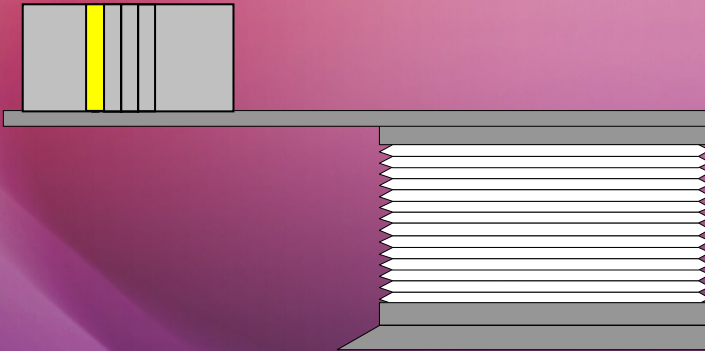
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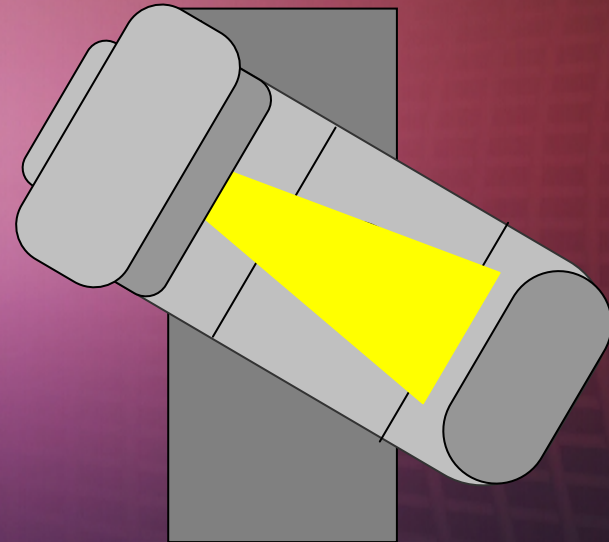
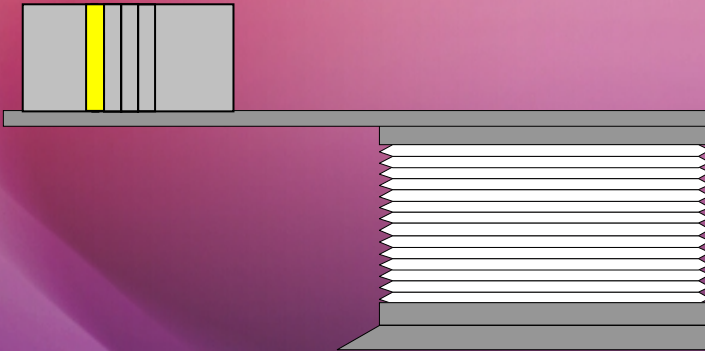
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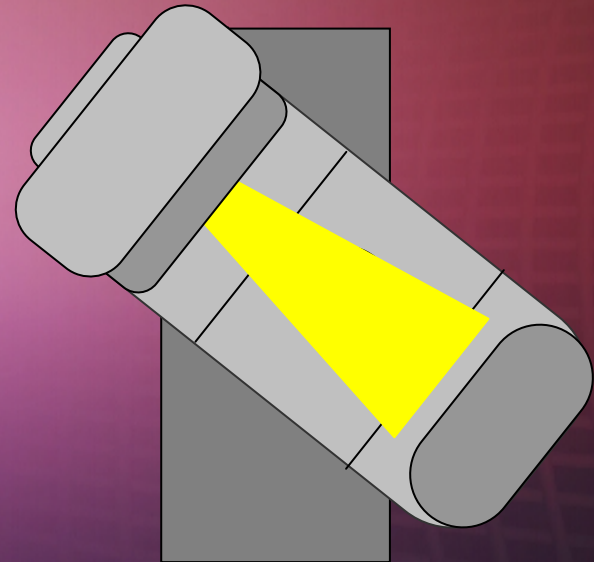
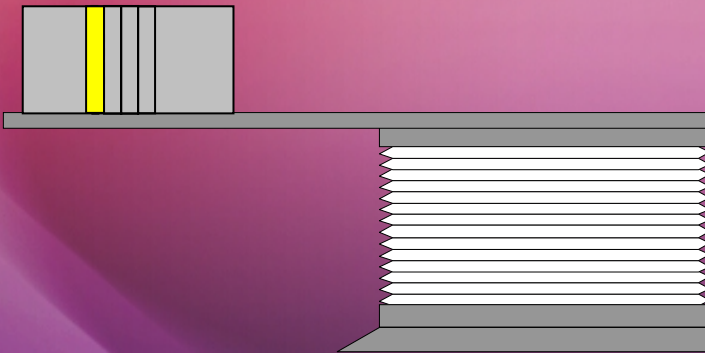
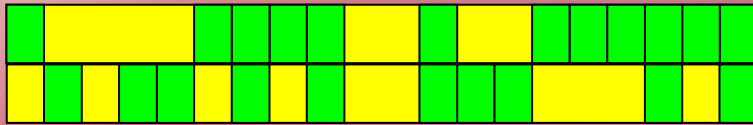
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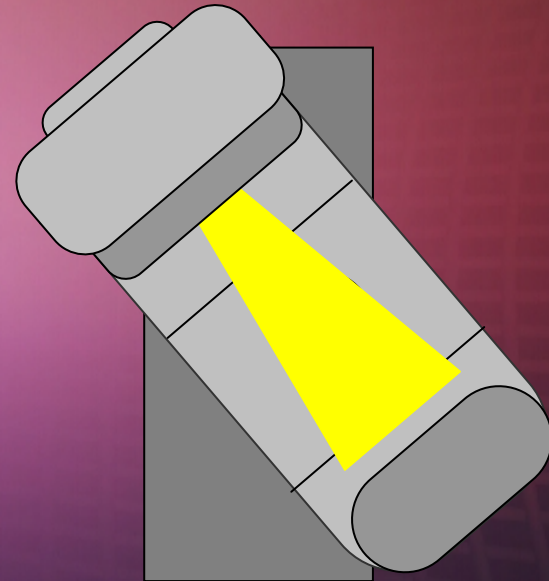
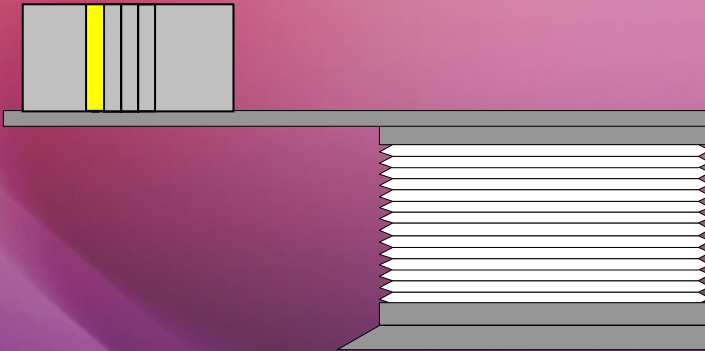
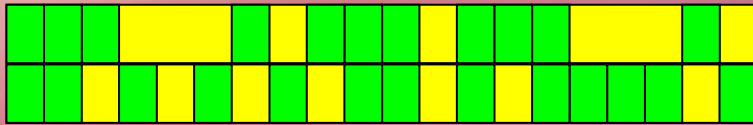
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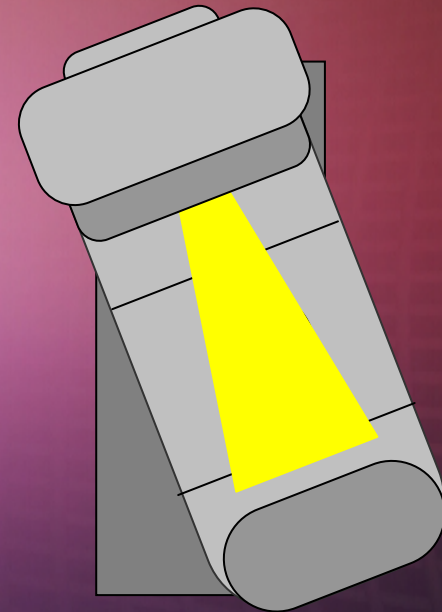
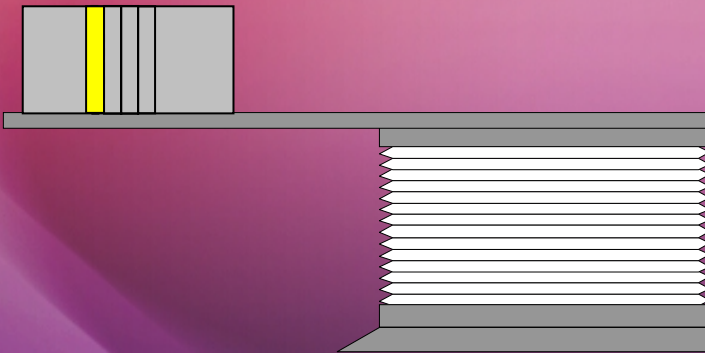
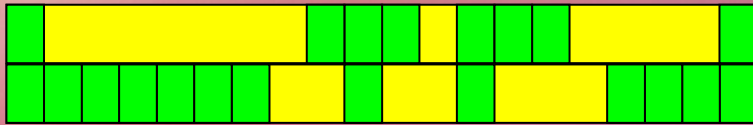
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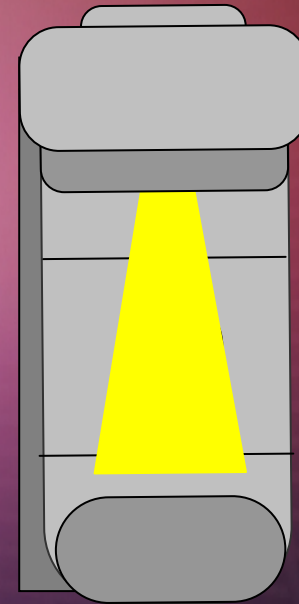
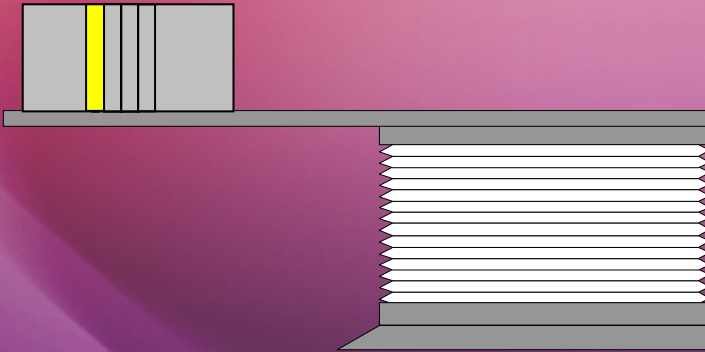
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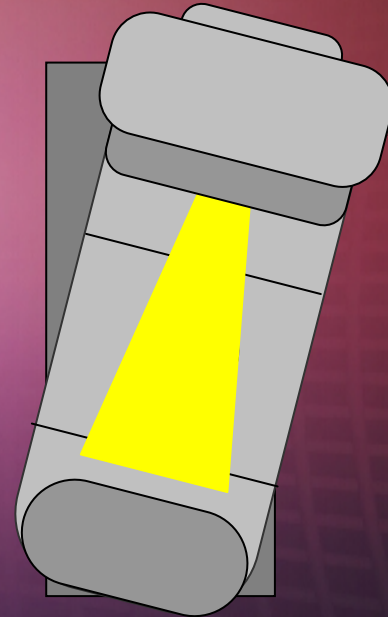
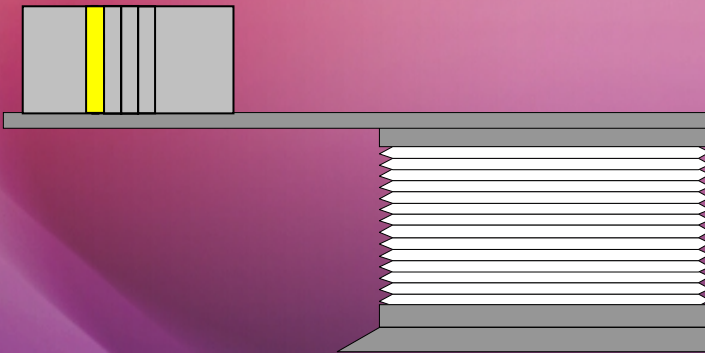
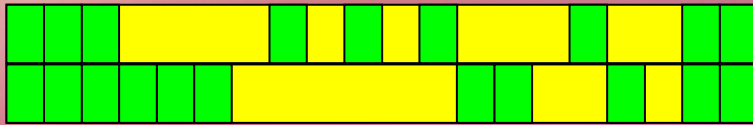
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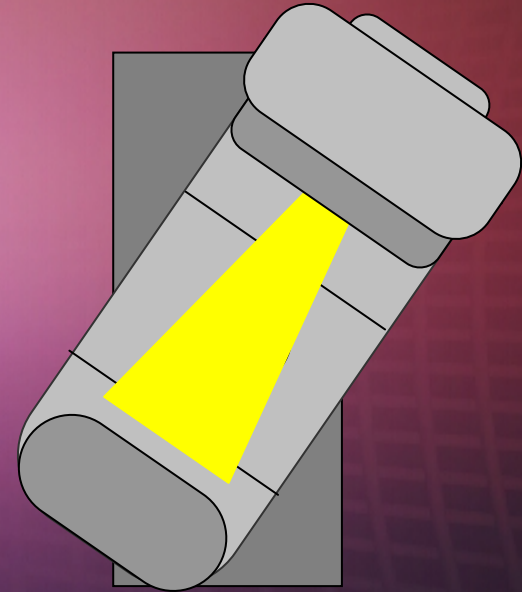
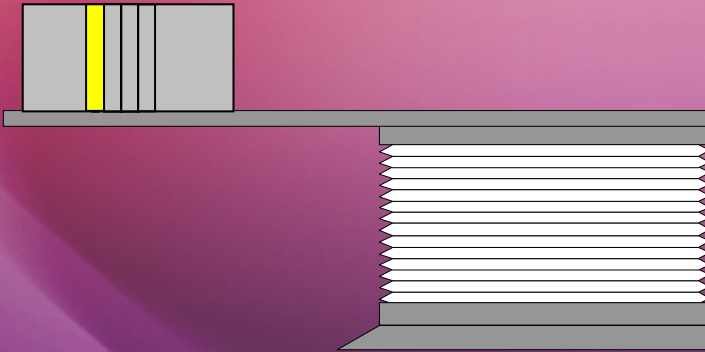
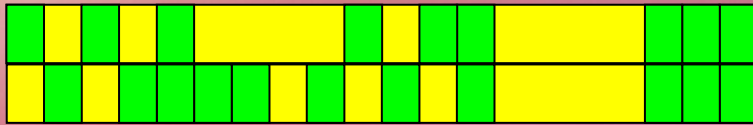
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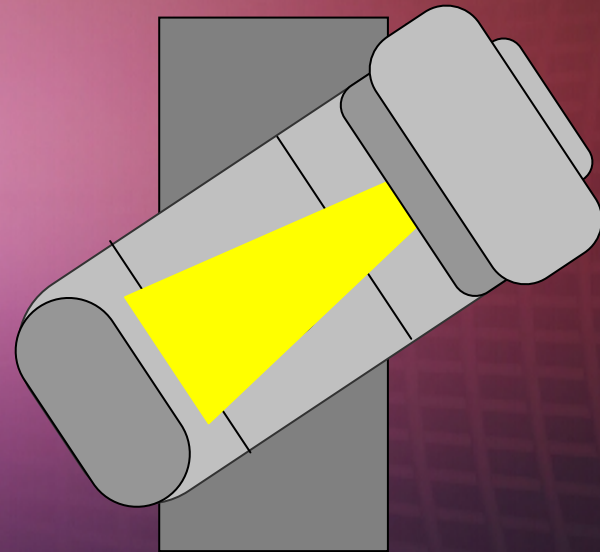
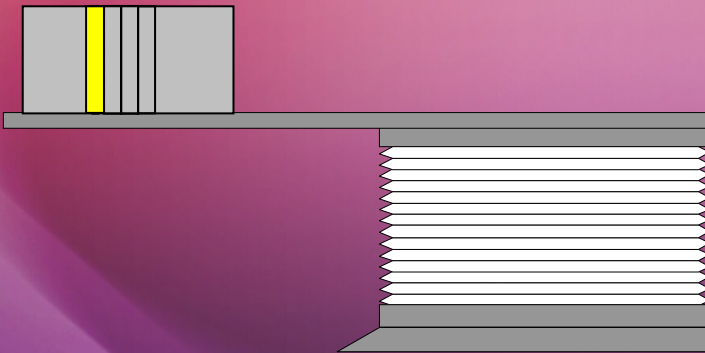
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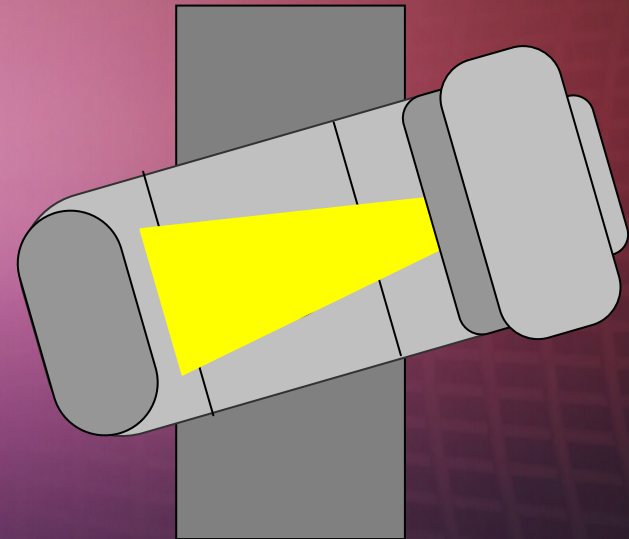
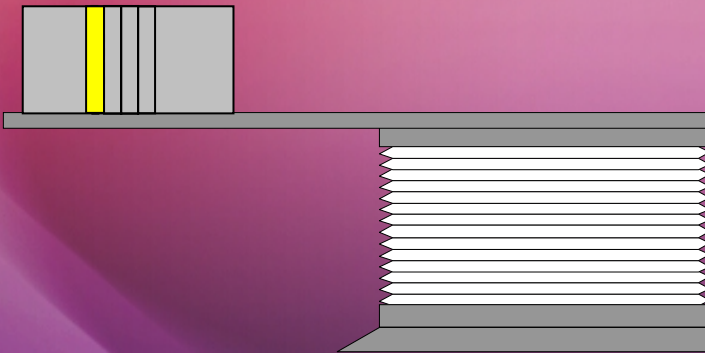
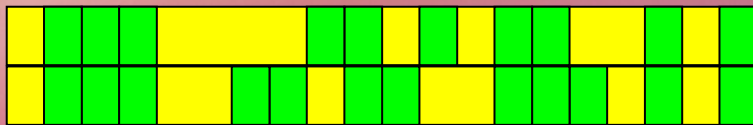
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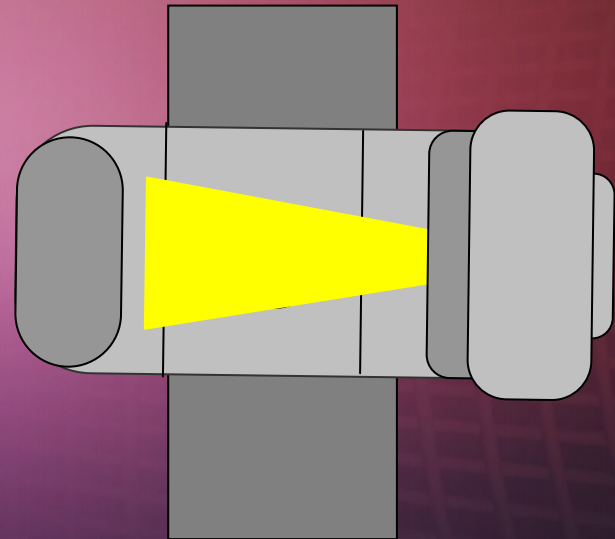
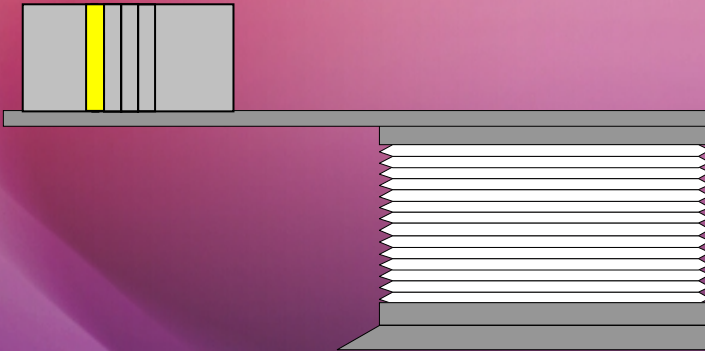
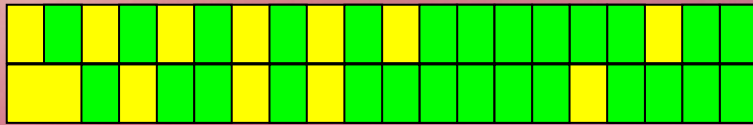
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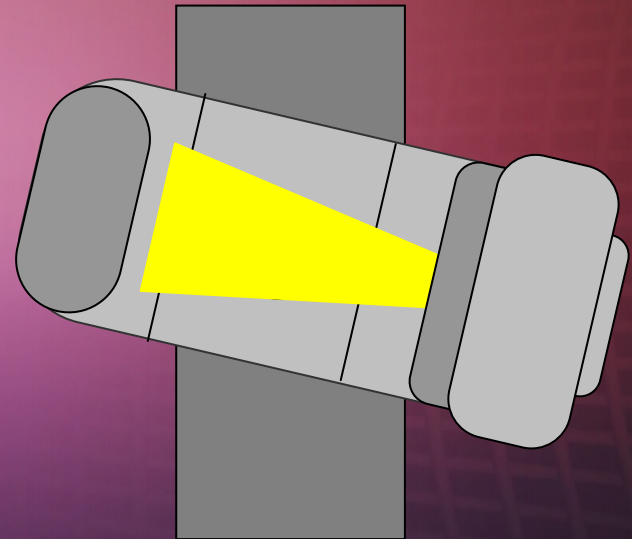
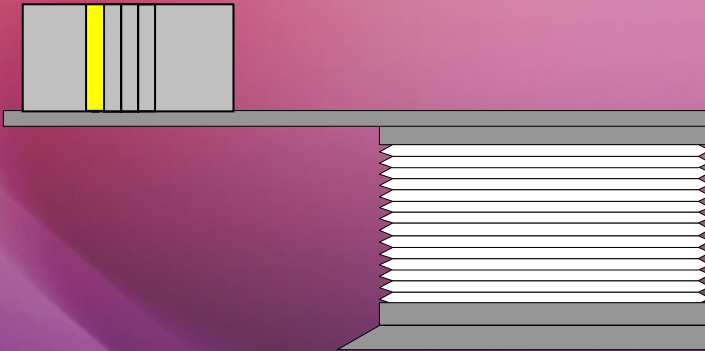
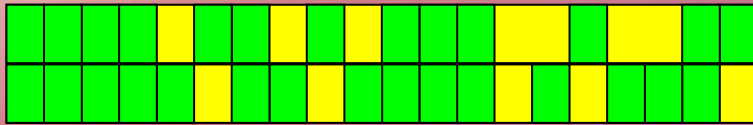
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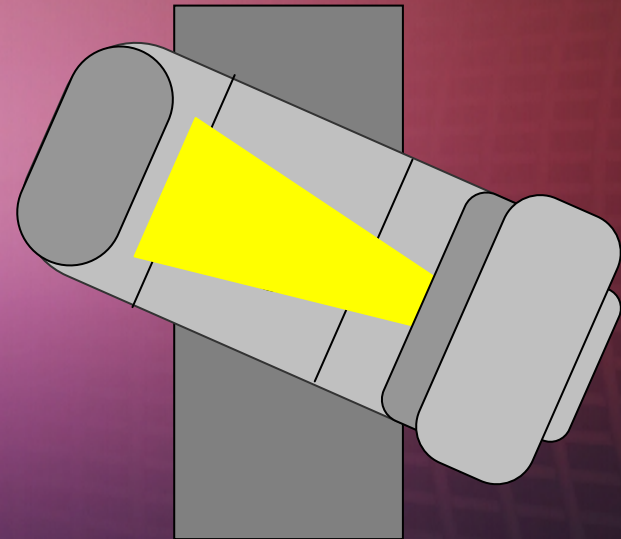
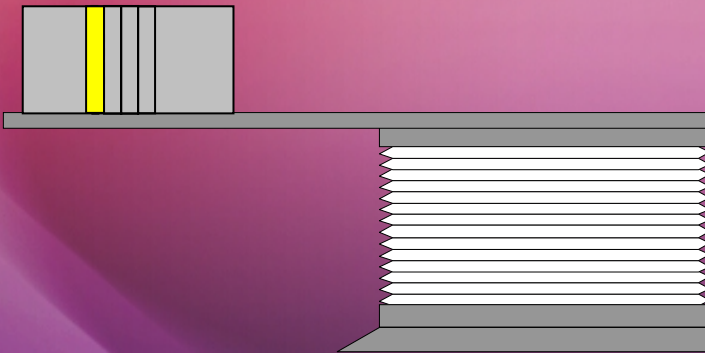
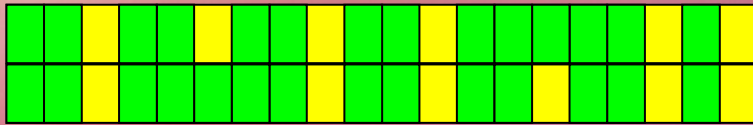
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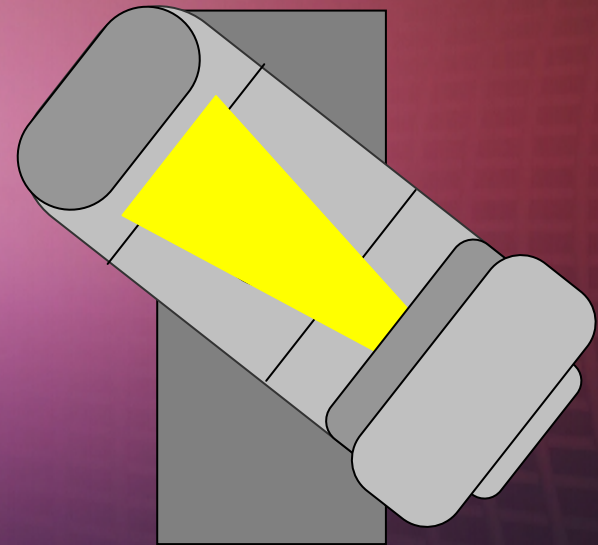
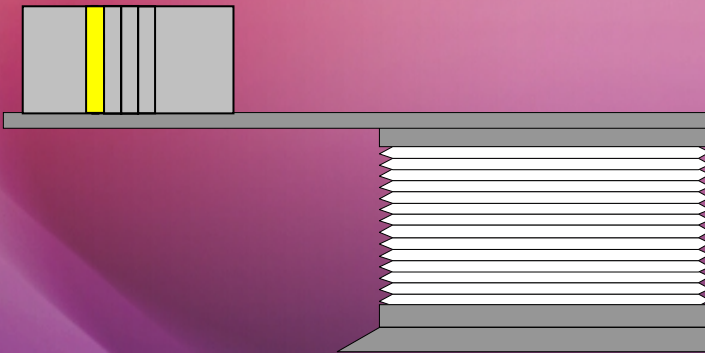
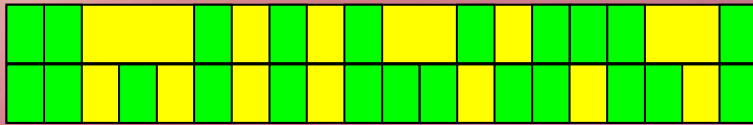
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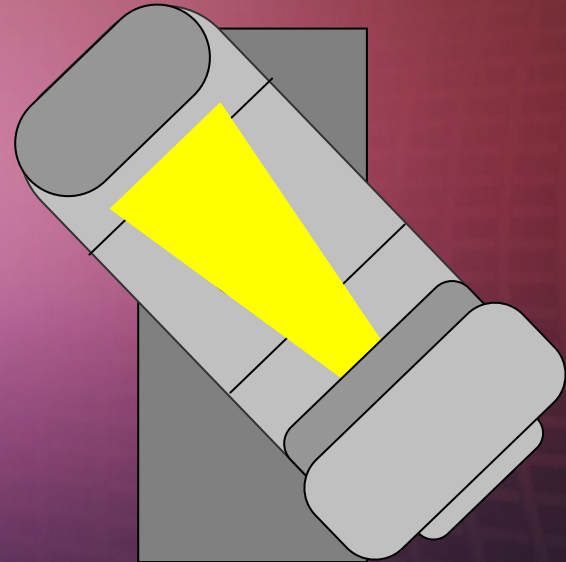
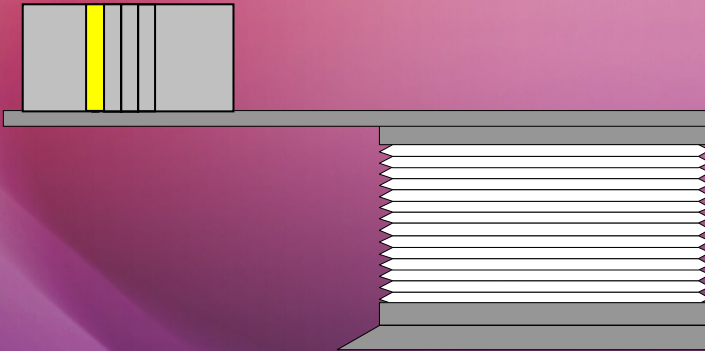
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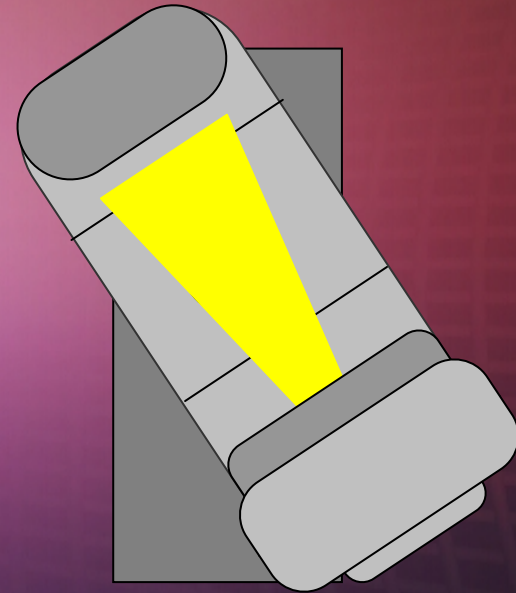
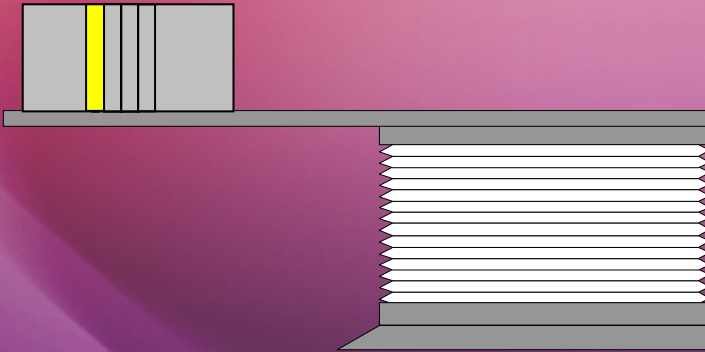
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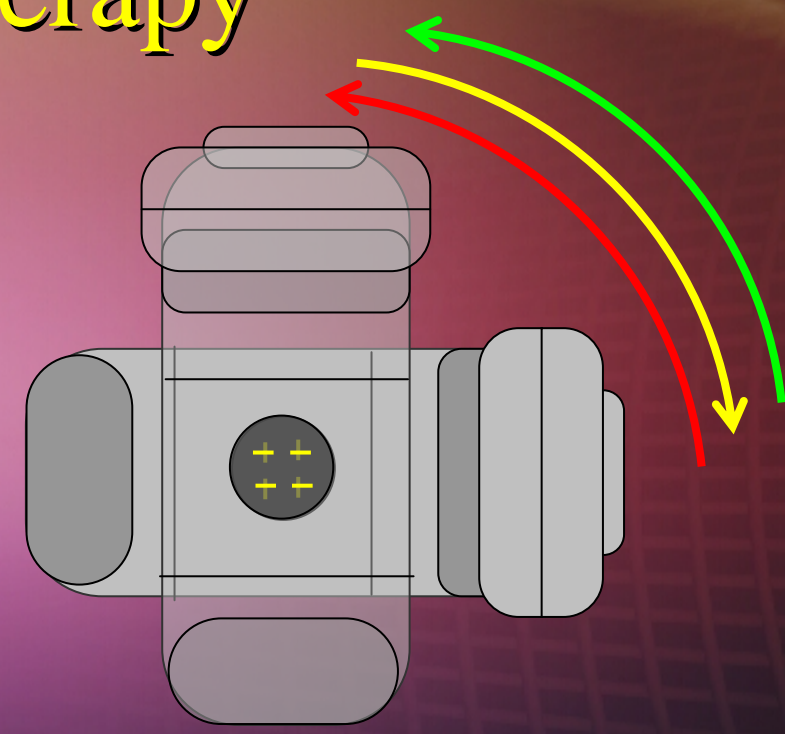
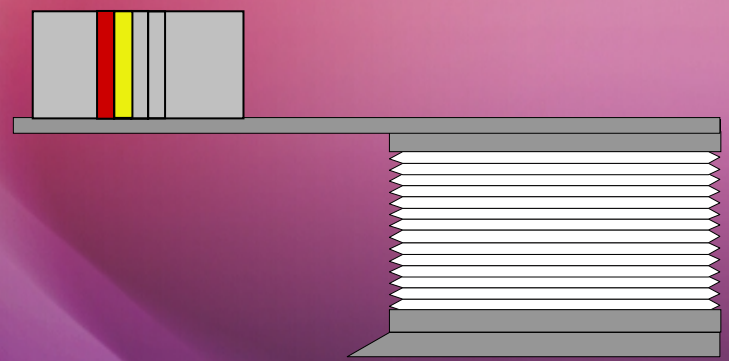
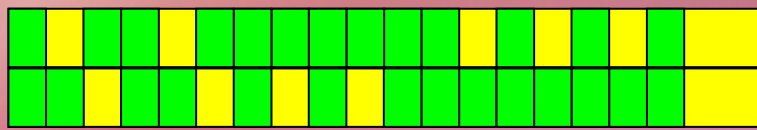
Serial Tomotherapy



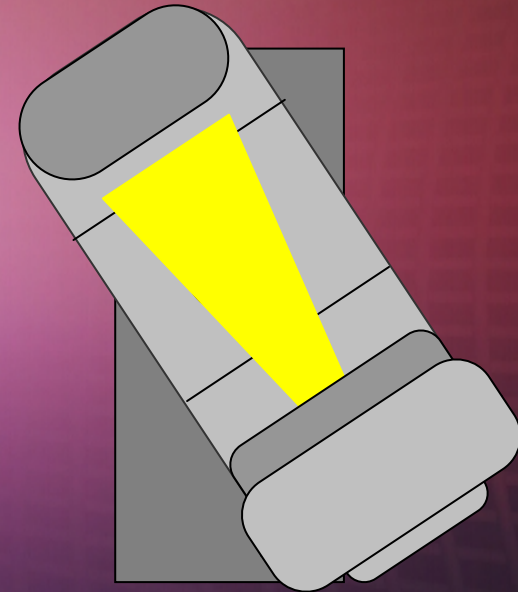
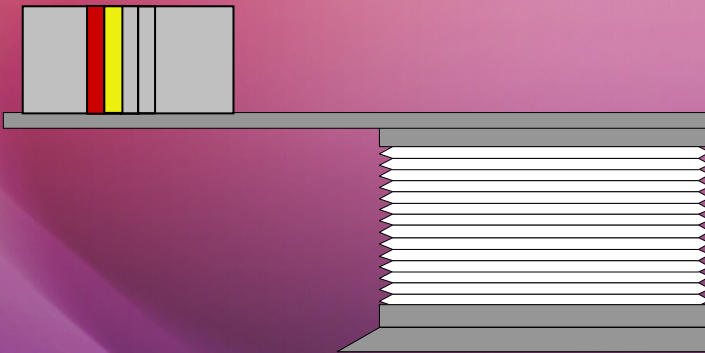
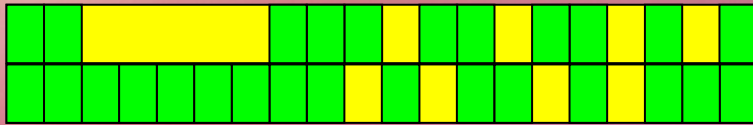
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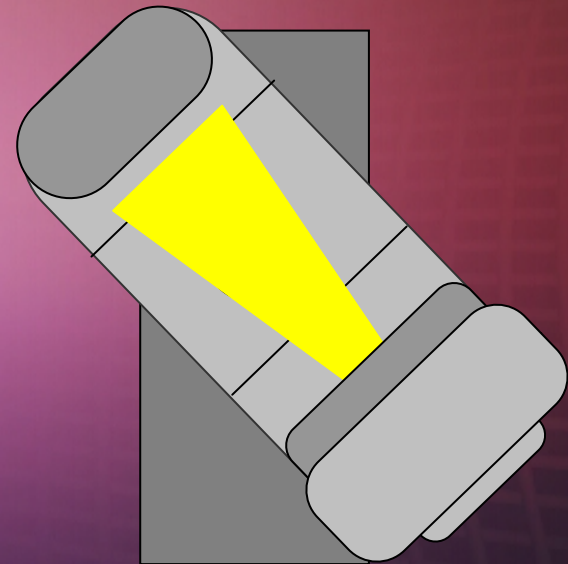
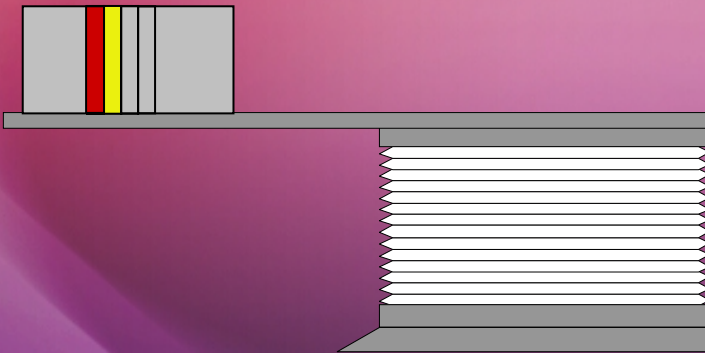
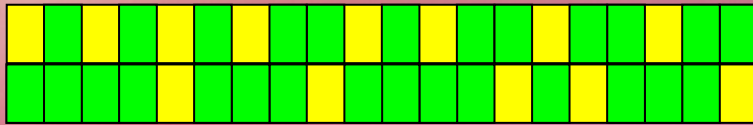
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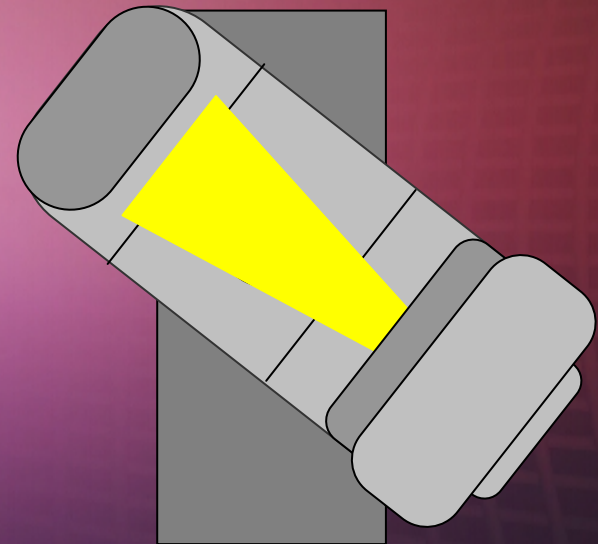
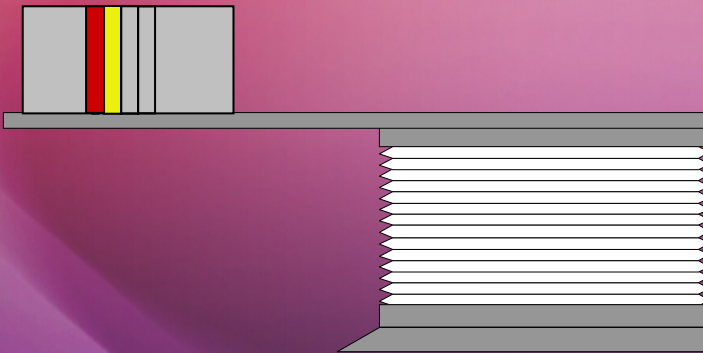
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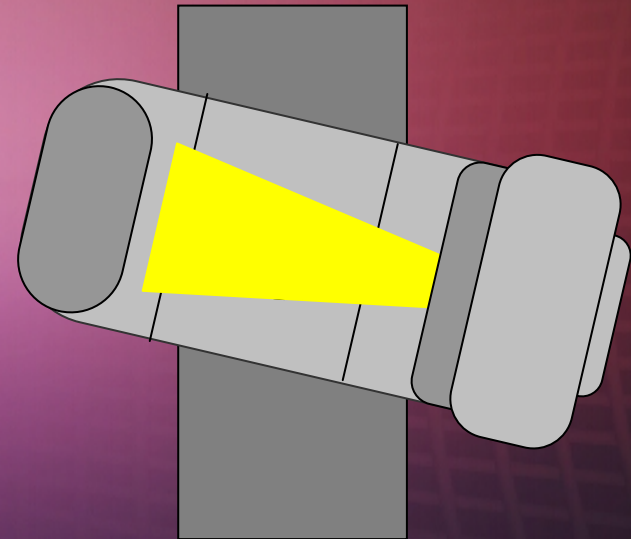
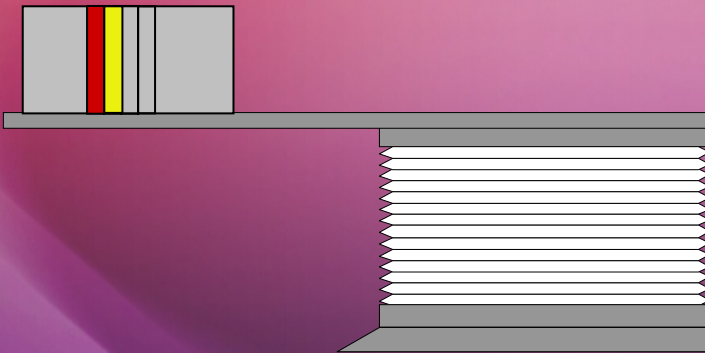
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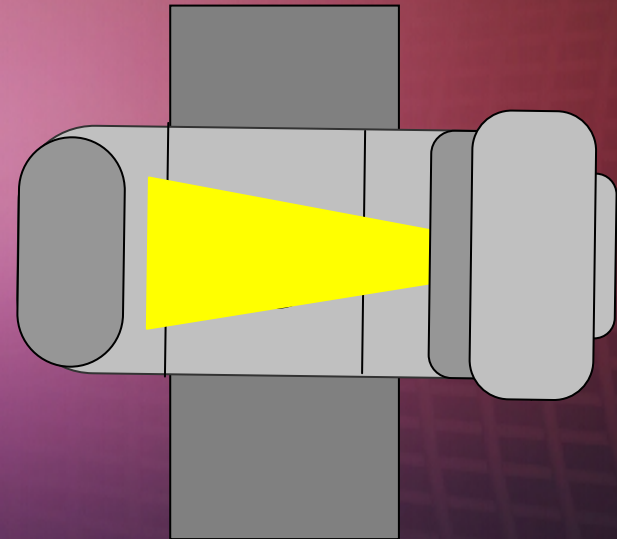
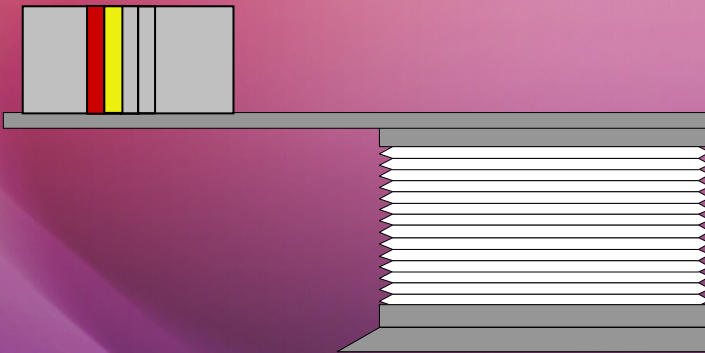
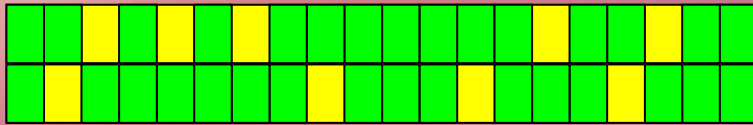
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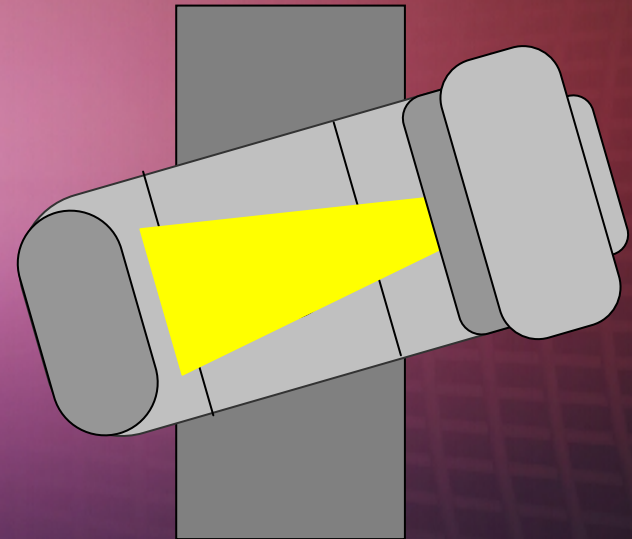
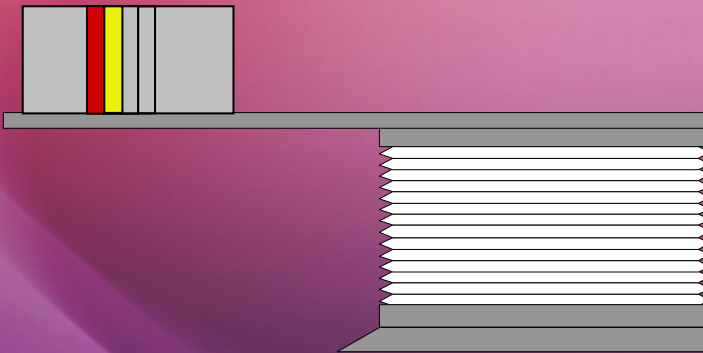
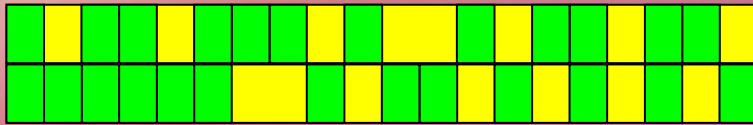
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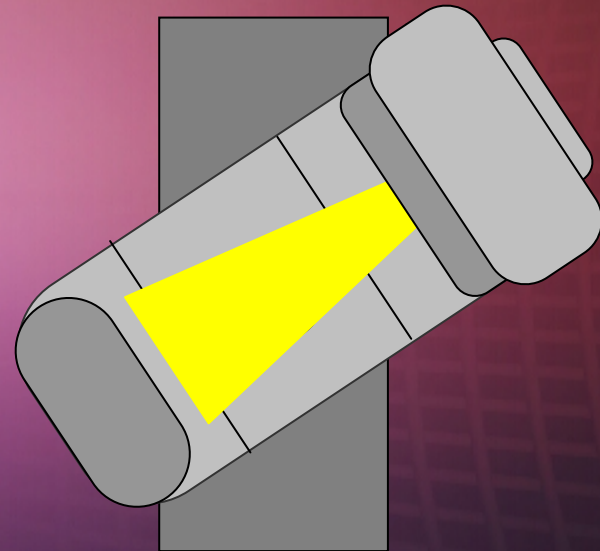
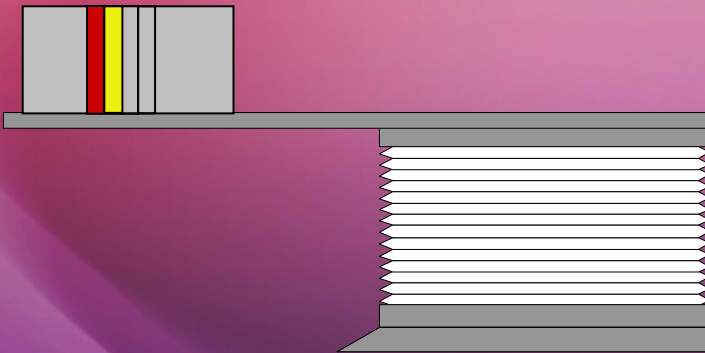
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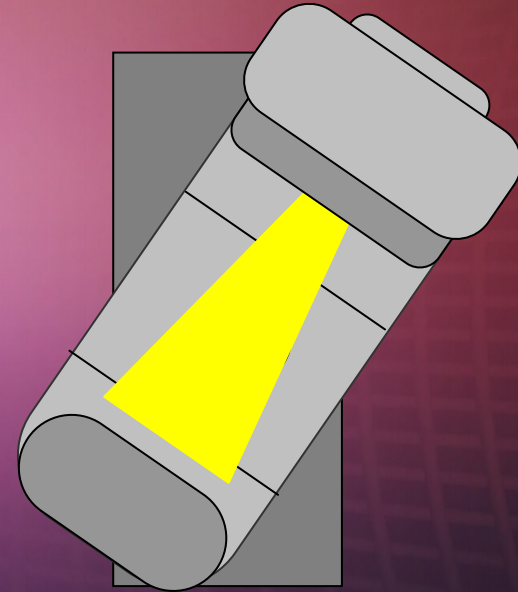
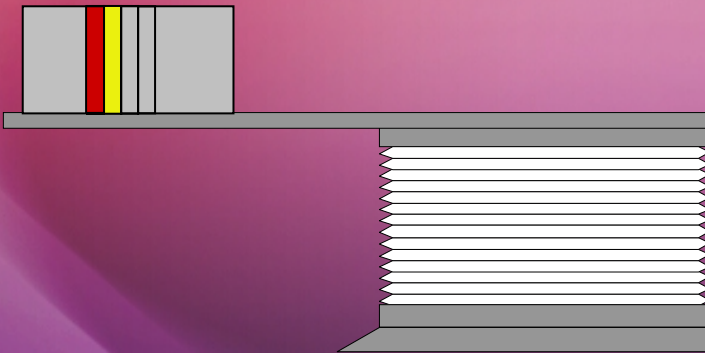
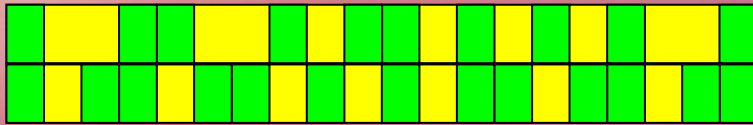
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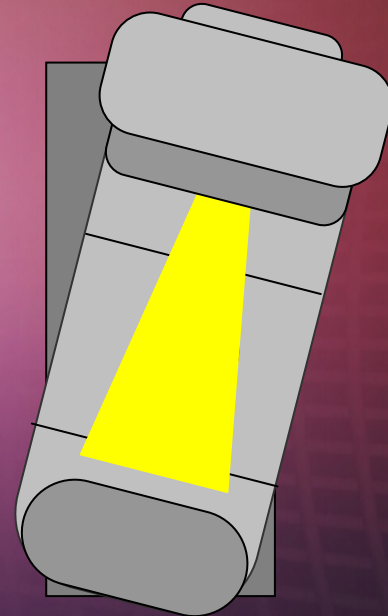
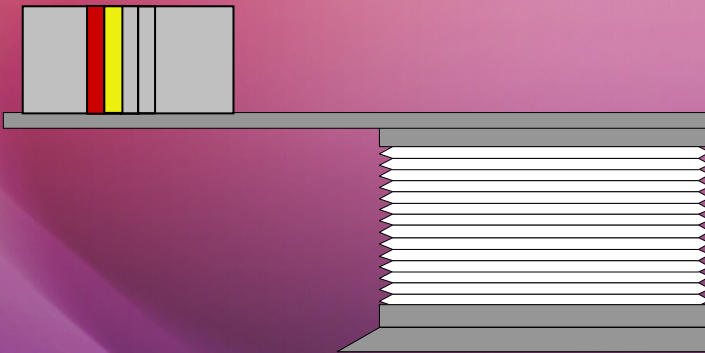
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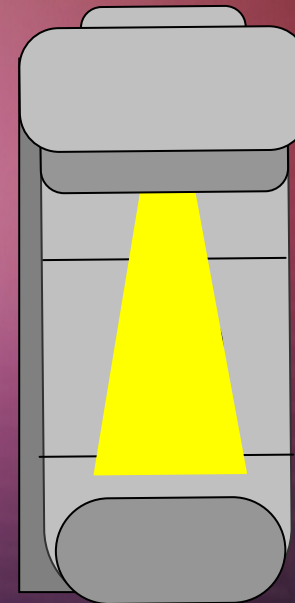
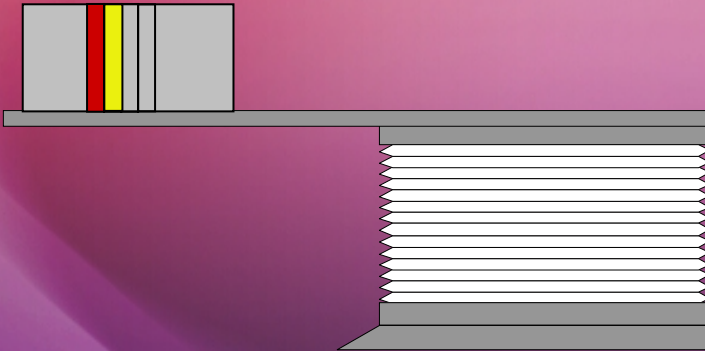
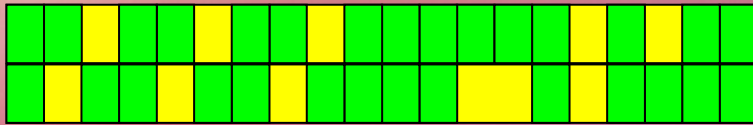
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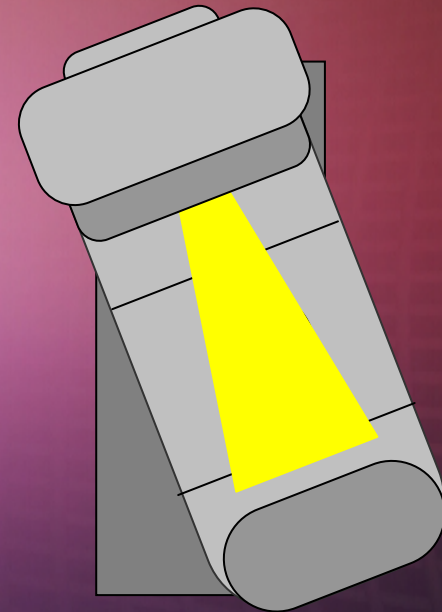
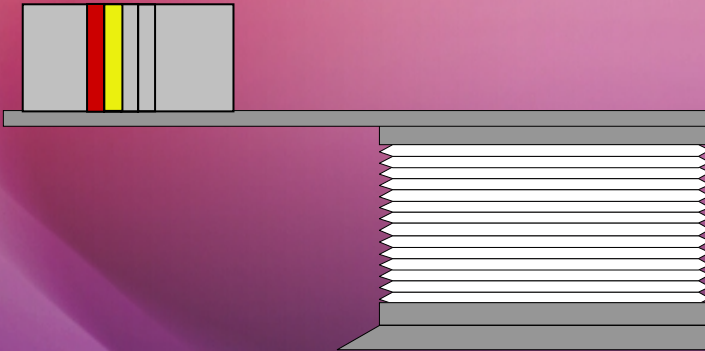
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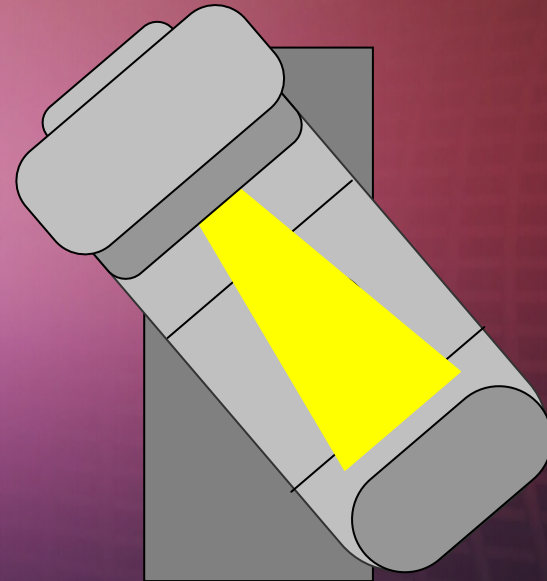
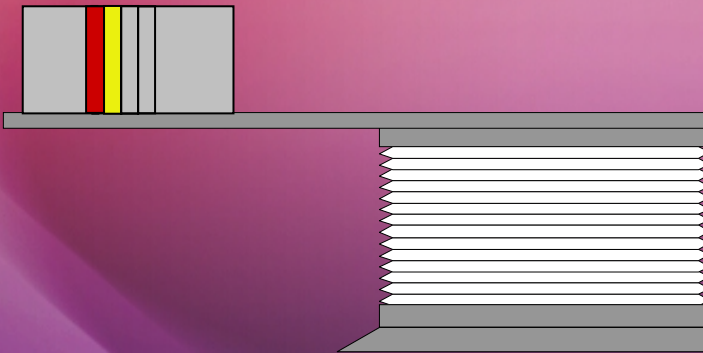
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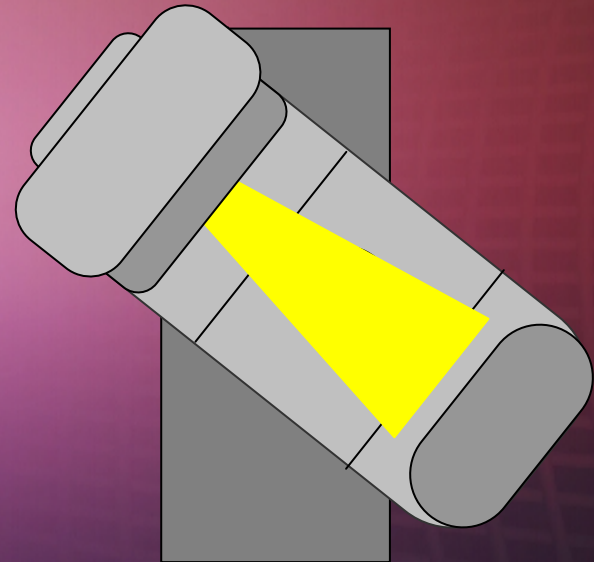
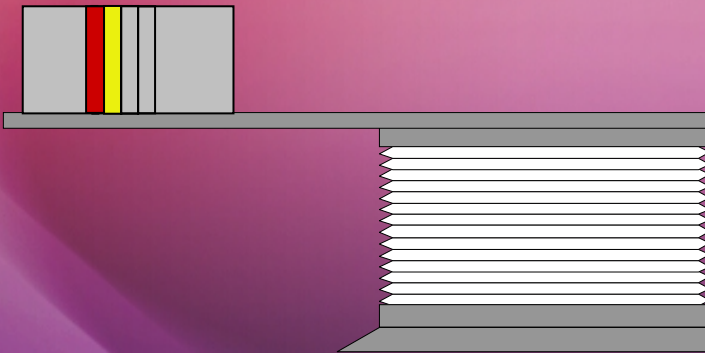
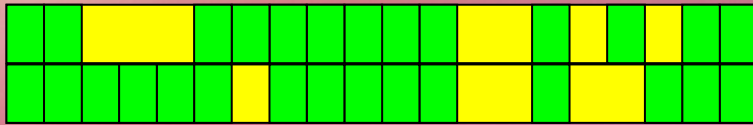
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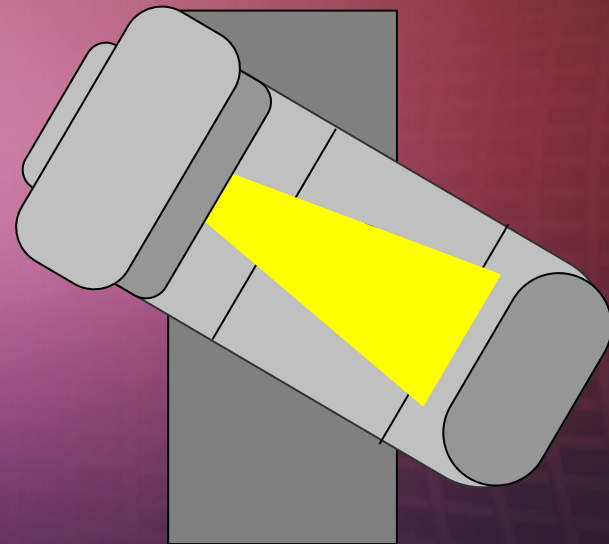
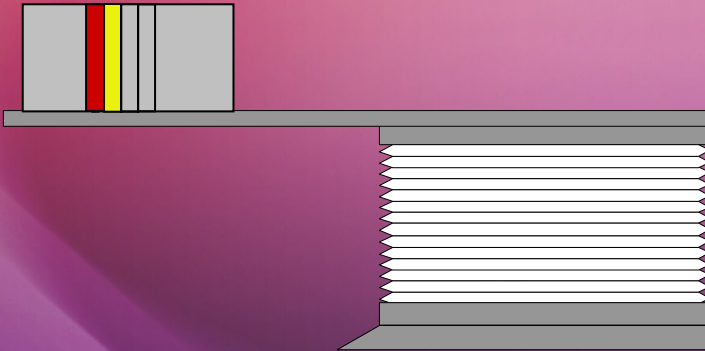
Serial Tomotherapy



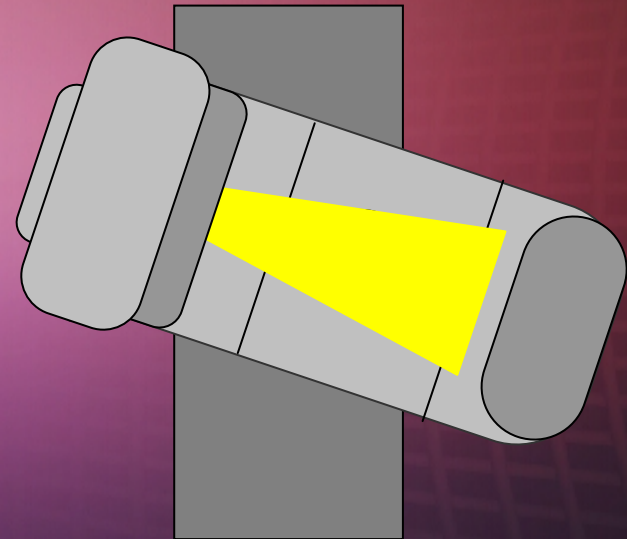
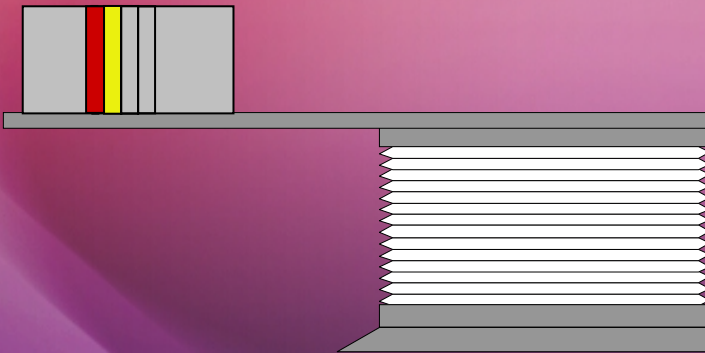
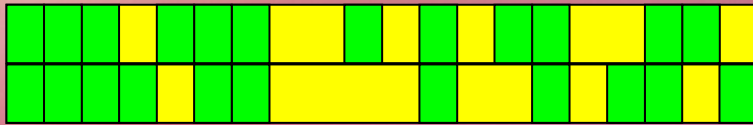
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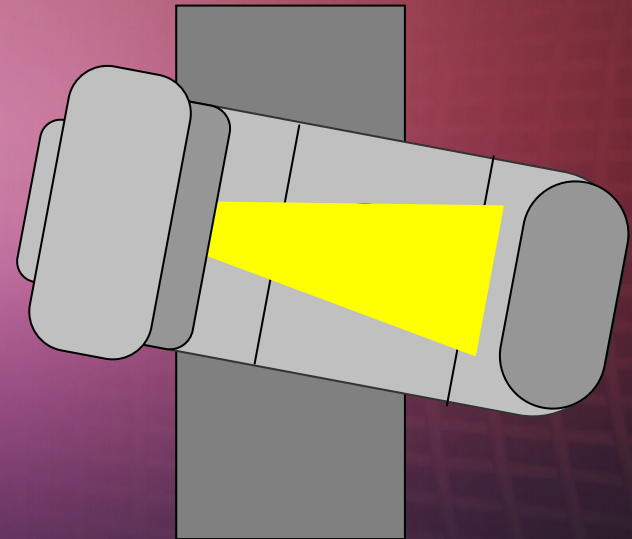
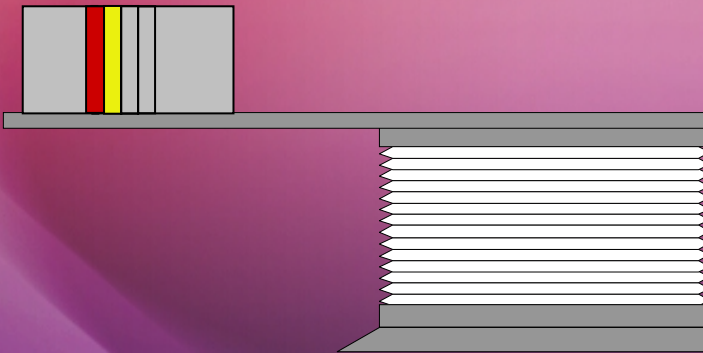
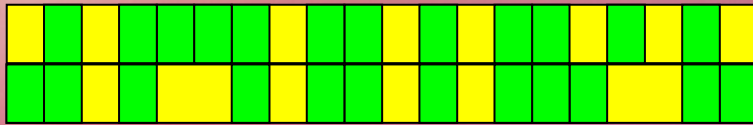
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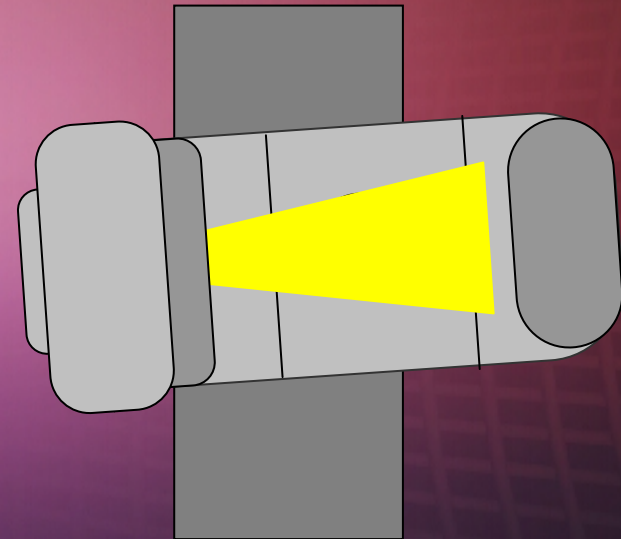
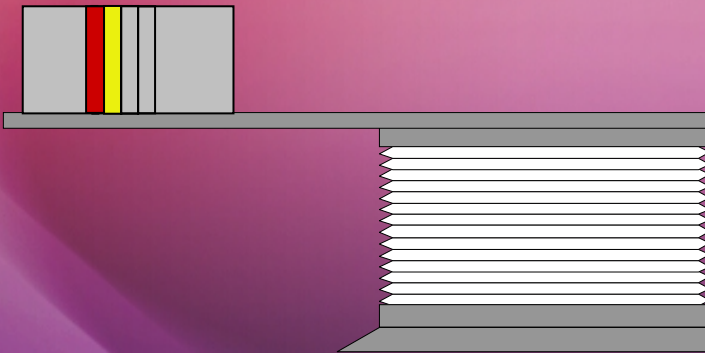
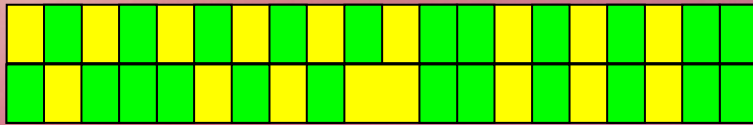
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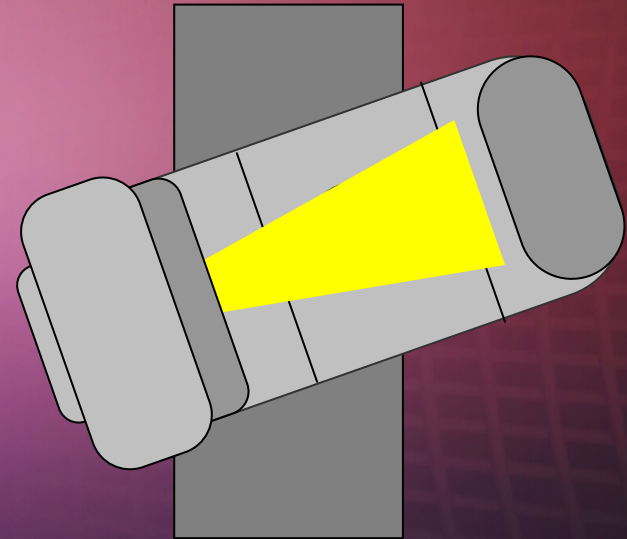
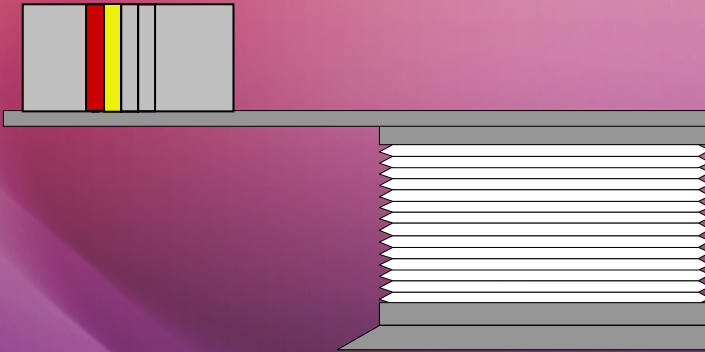
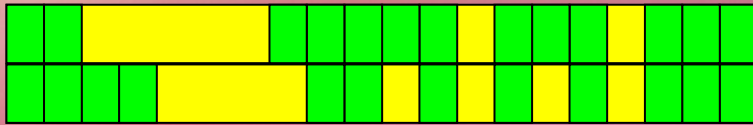
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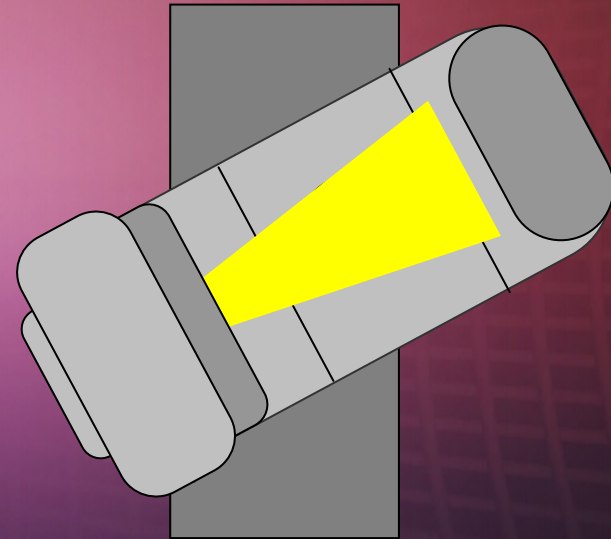
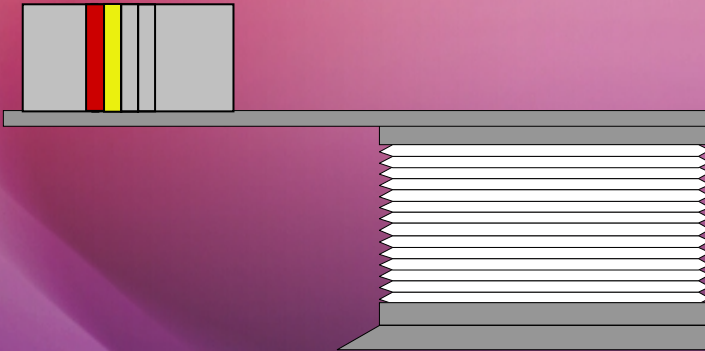
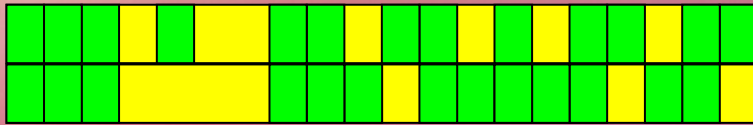
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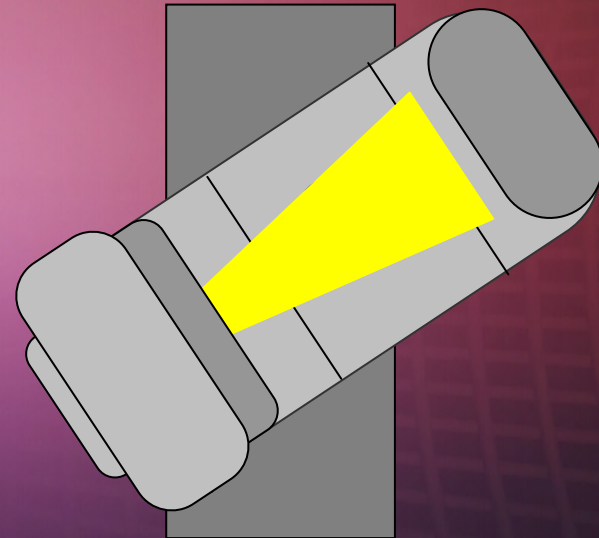
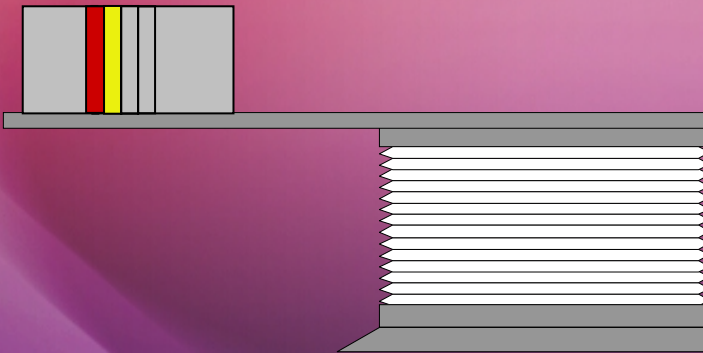
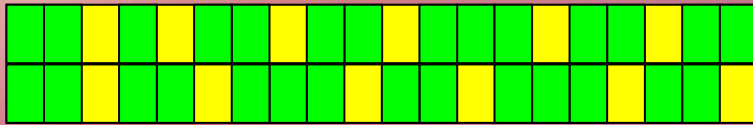
Serial Tomotherapy



Serial Tomotherapy

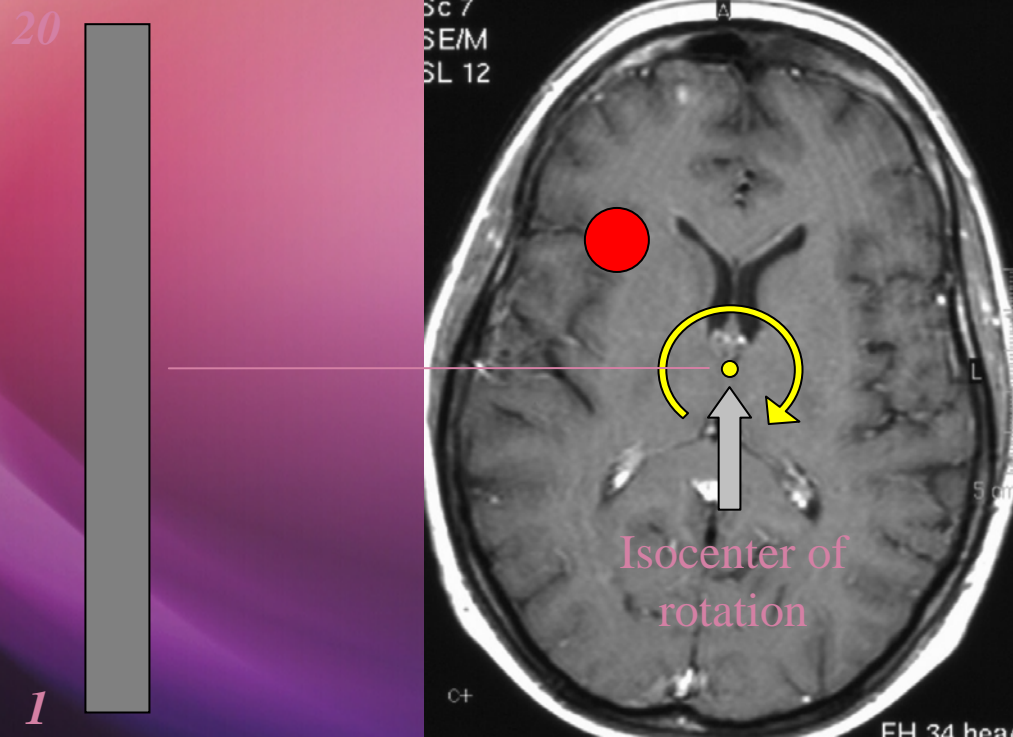


Serial Tomotherapy

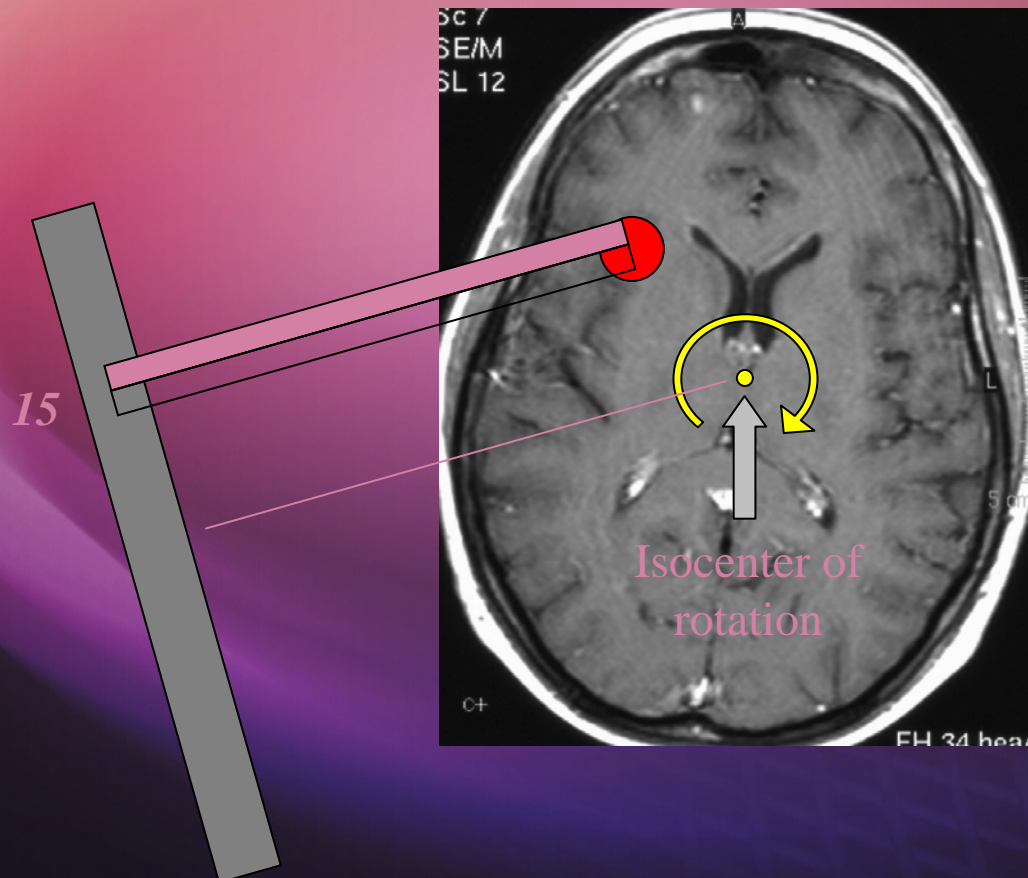


Peacock MIMiC IMRS

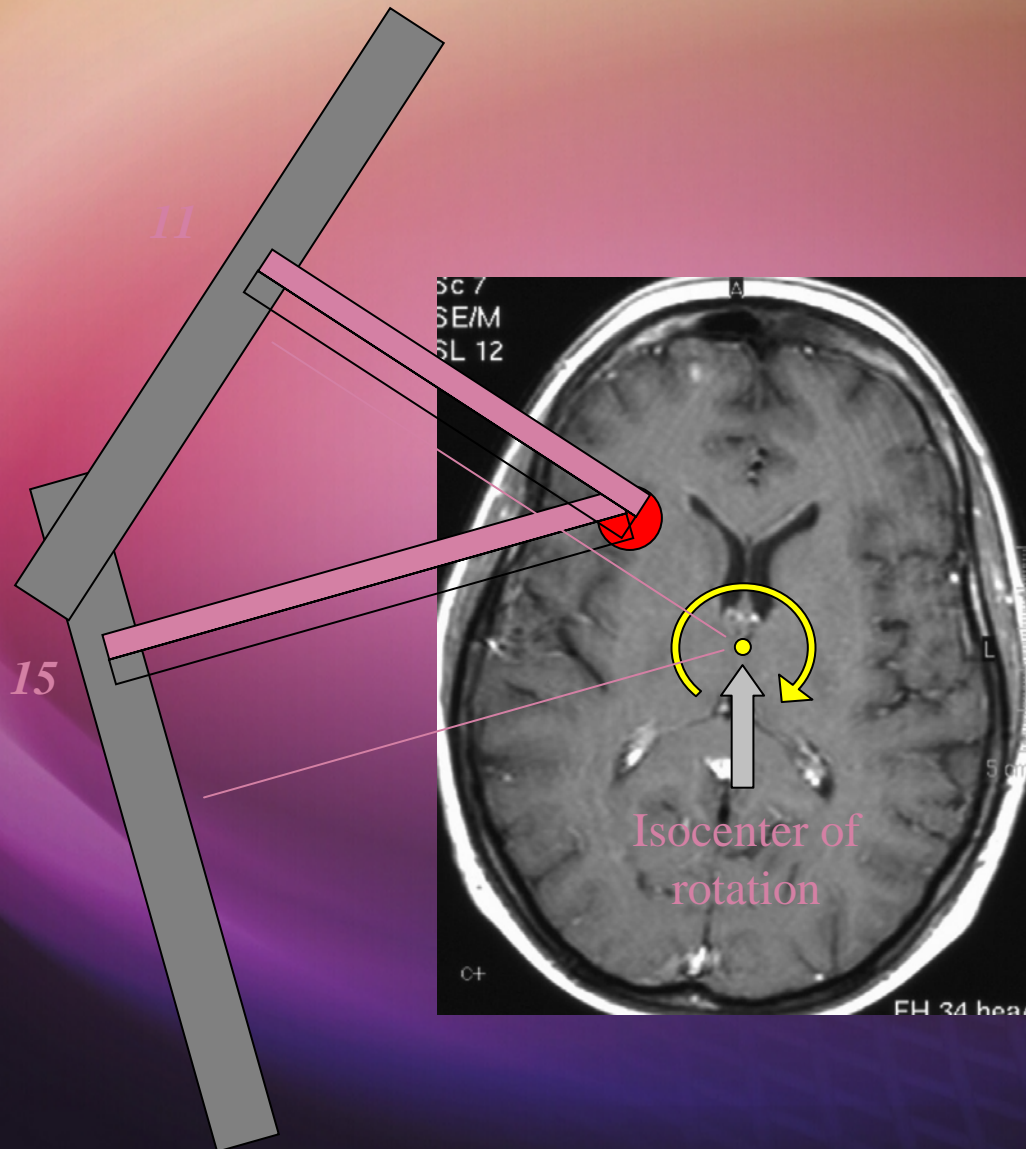
Target center of gravity is not the isocenter of gantry rotation



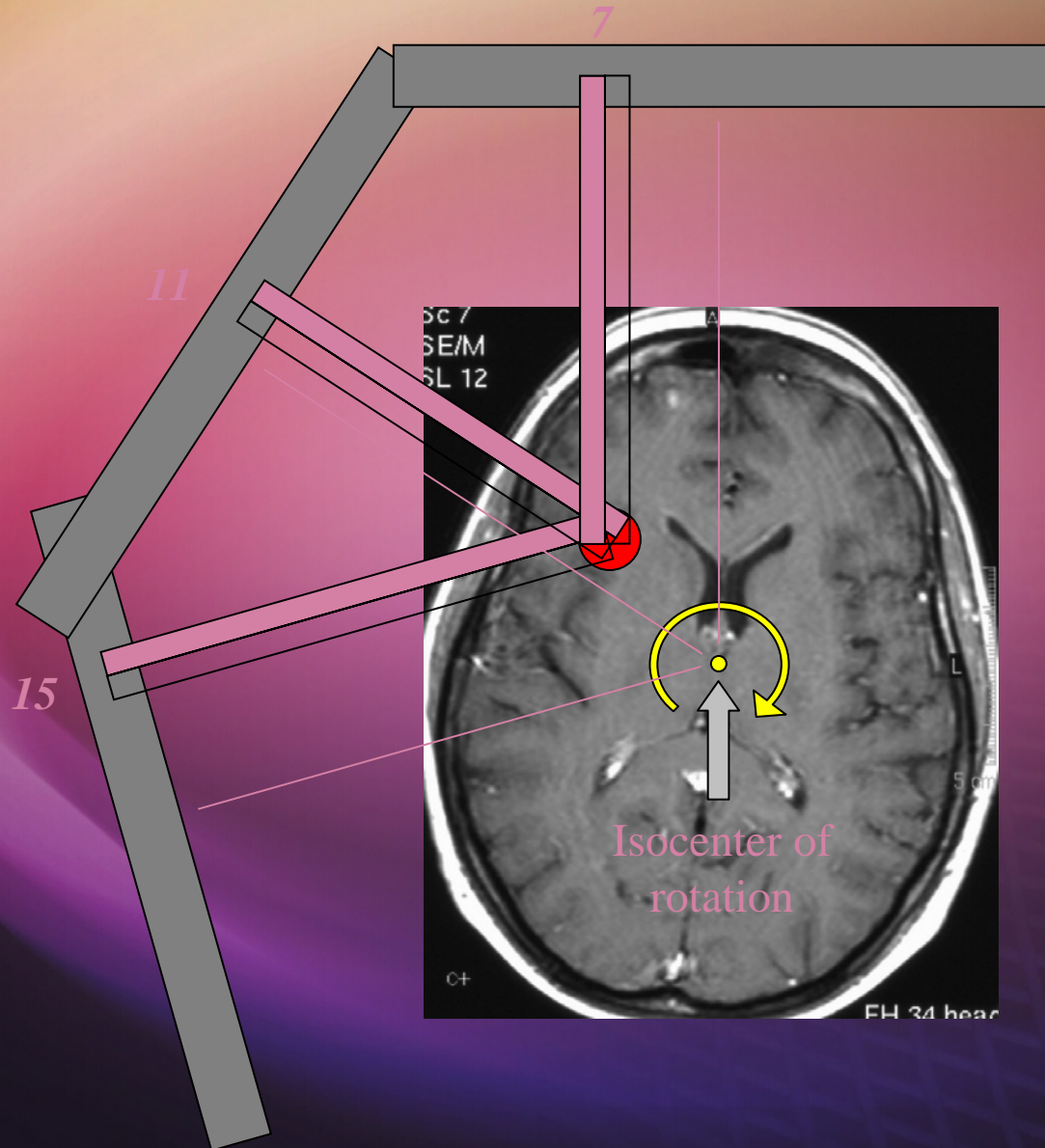
Peacock MIMiC IMRS



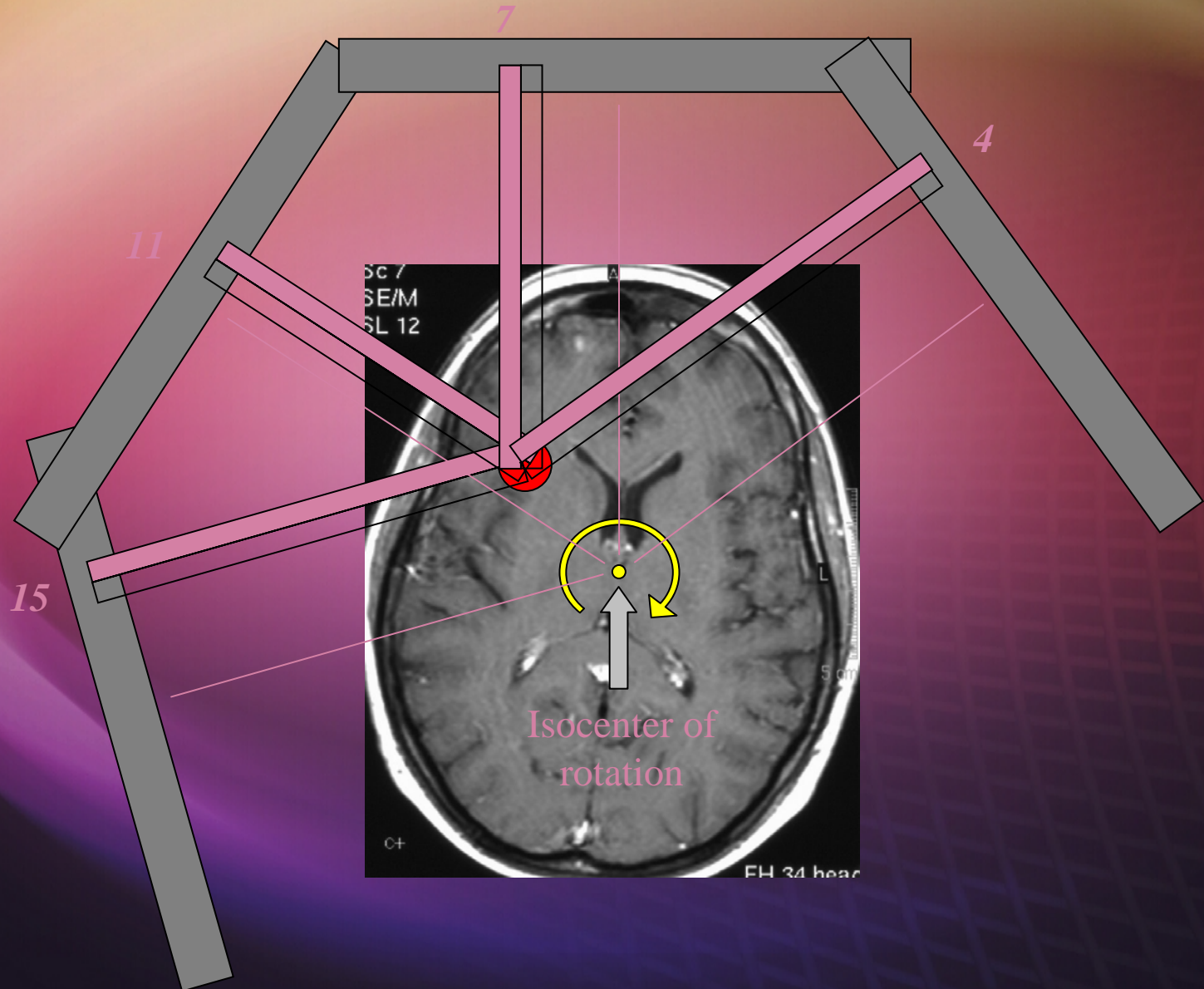
Peacock MIMiC IMRS



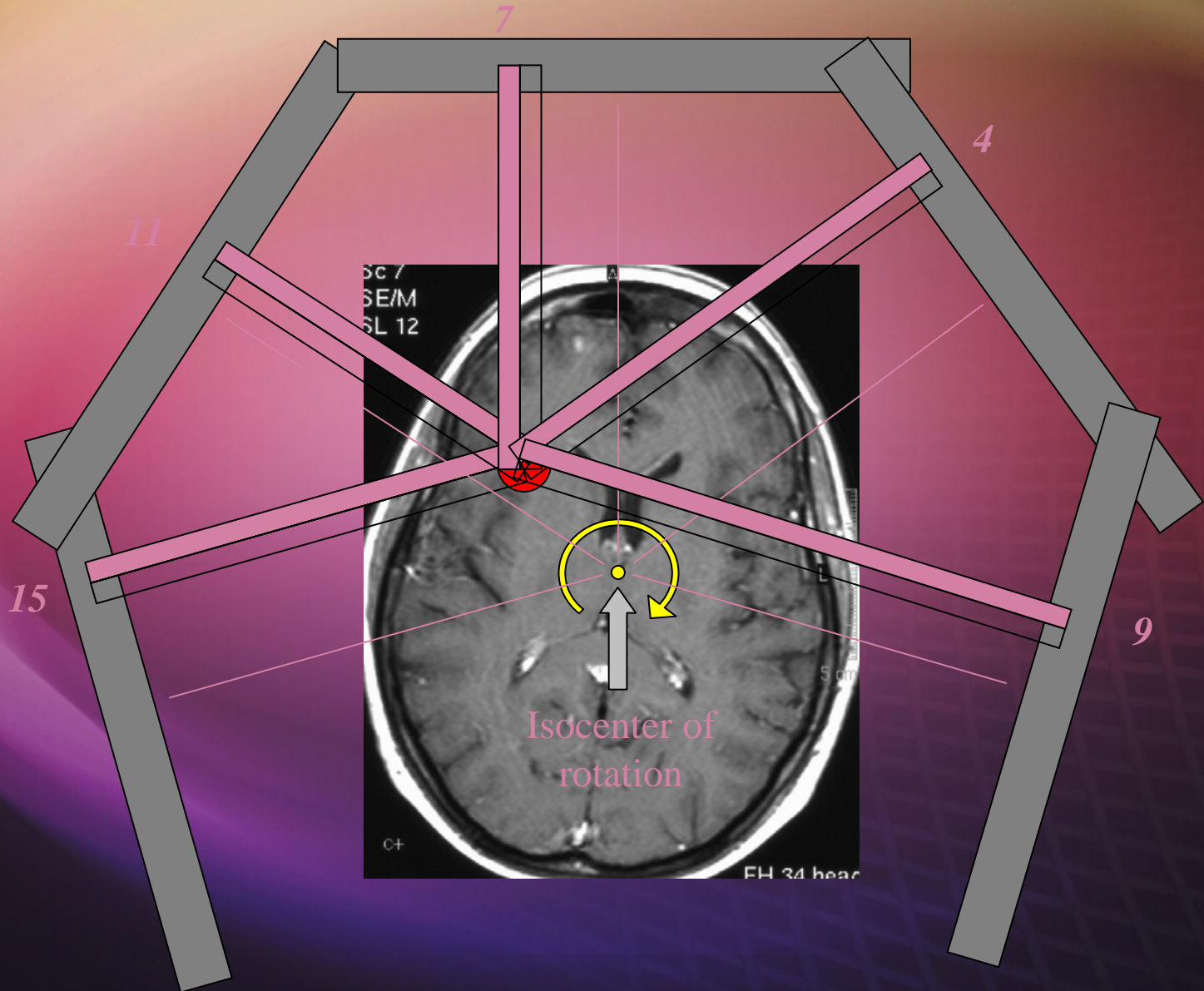
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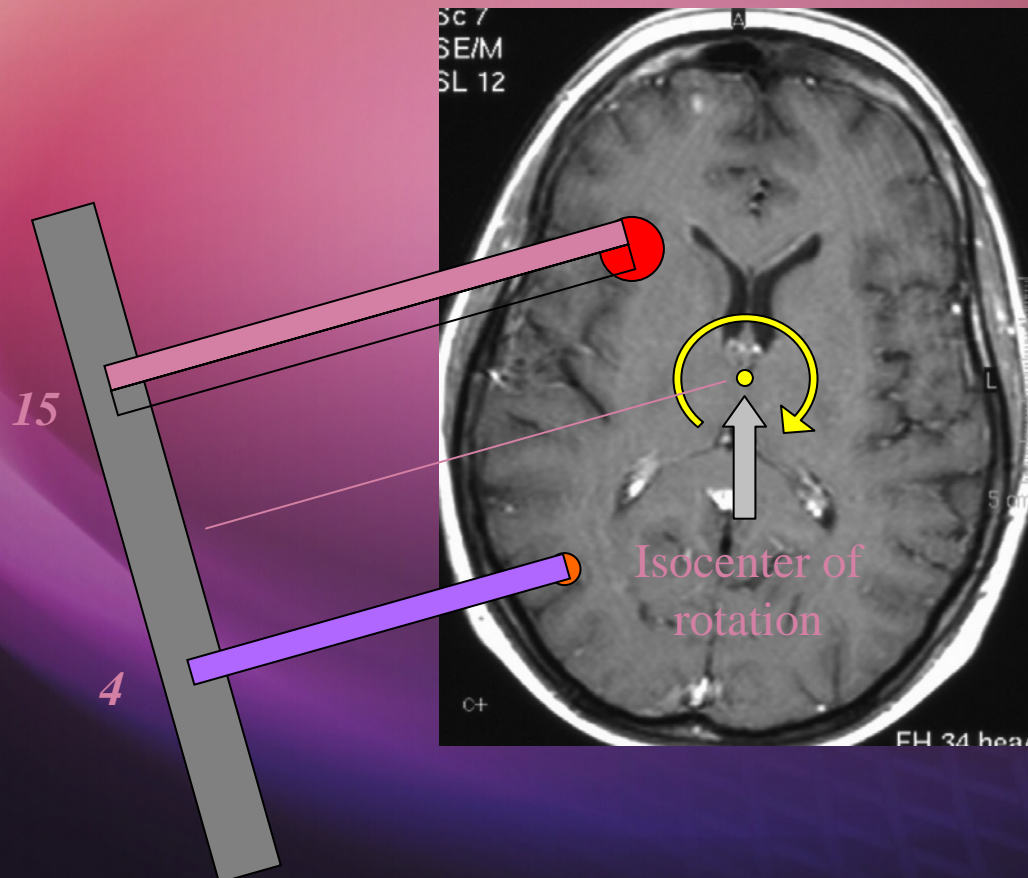
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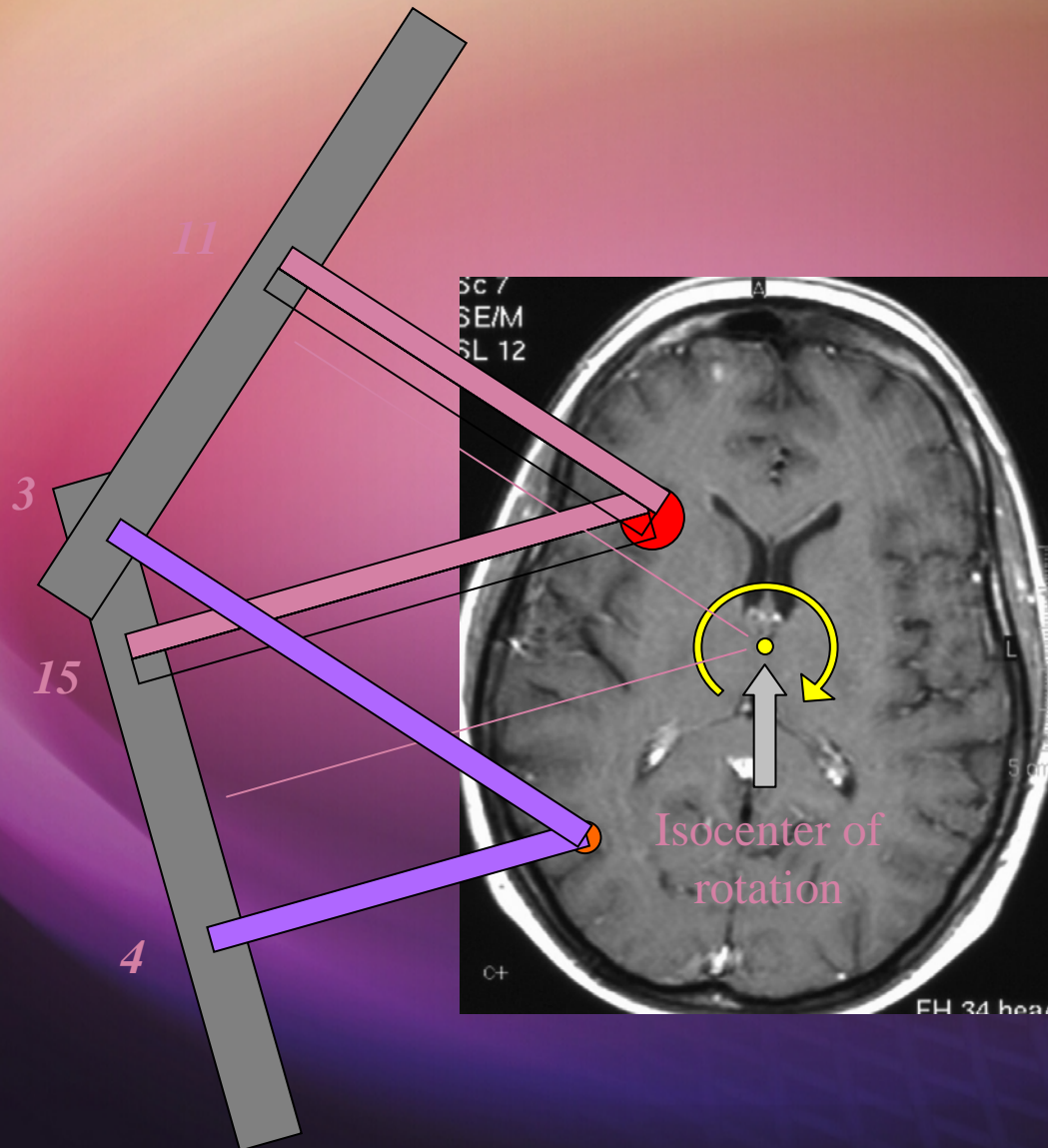
Peacock MIMiC IMRS



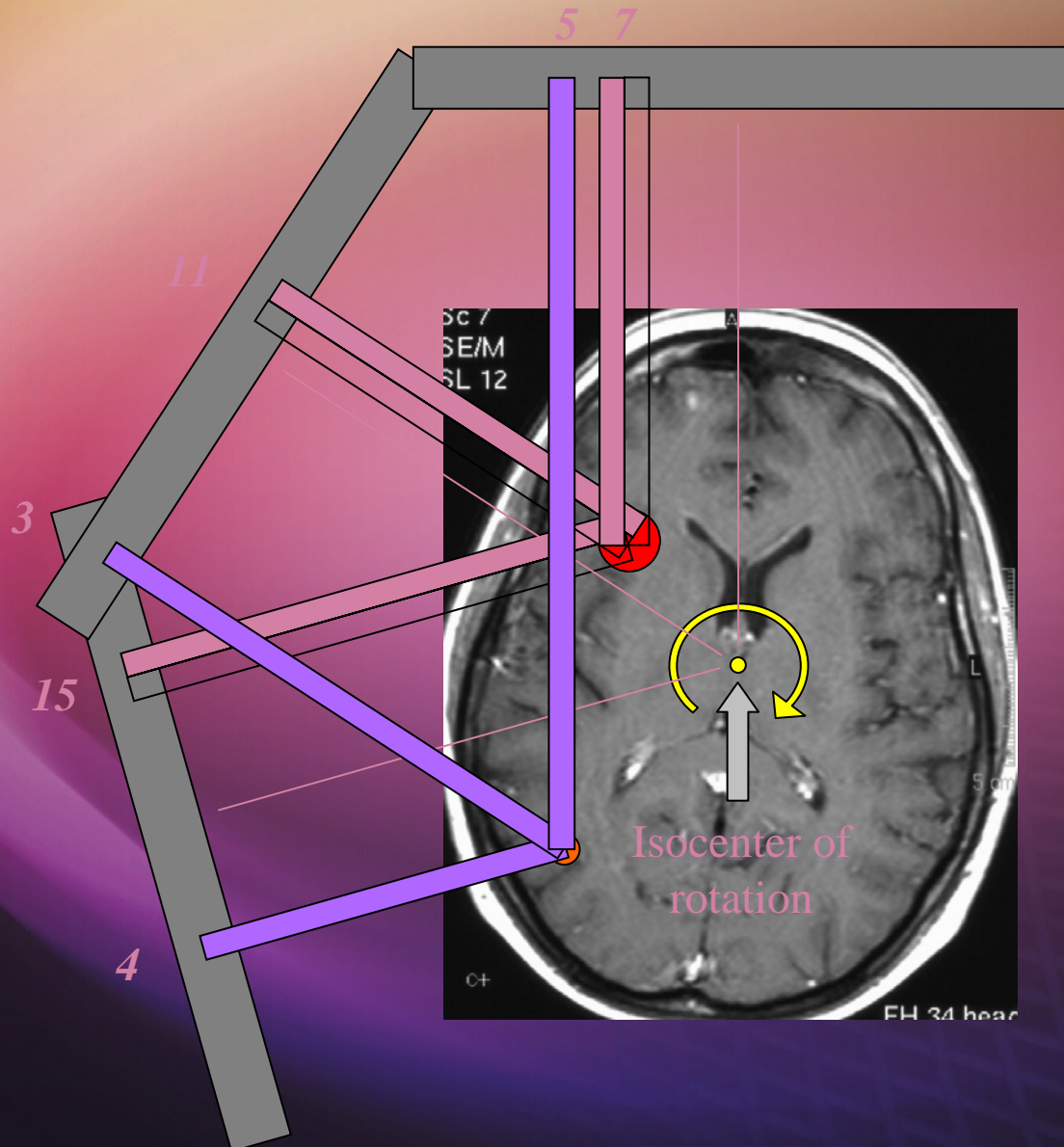
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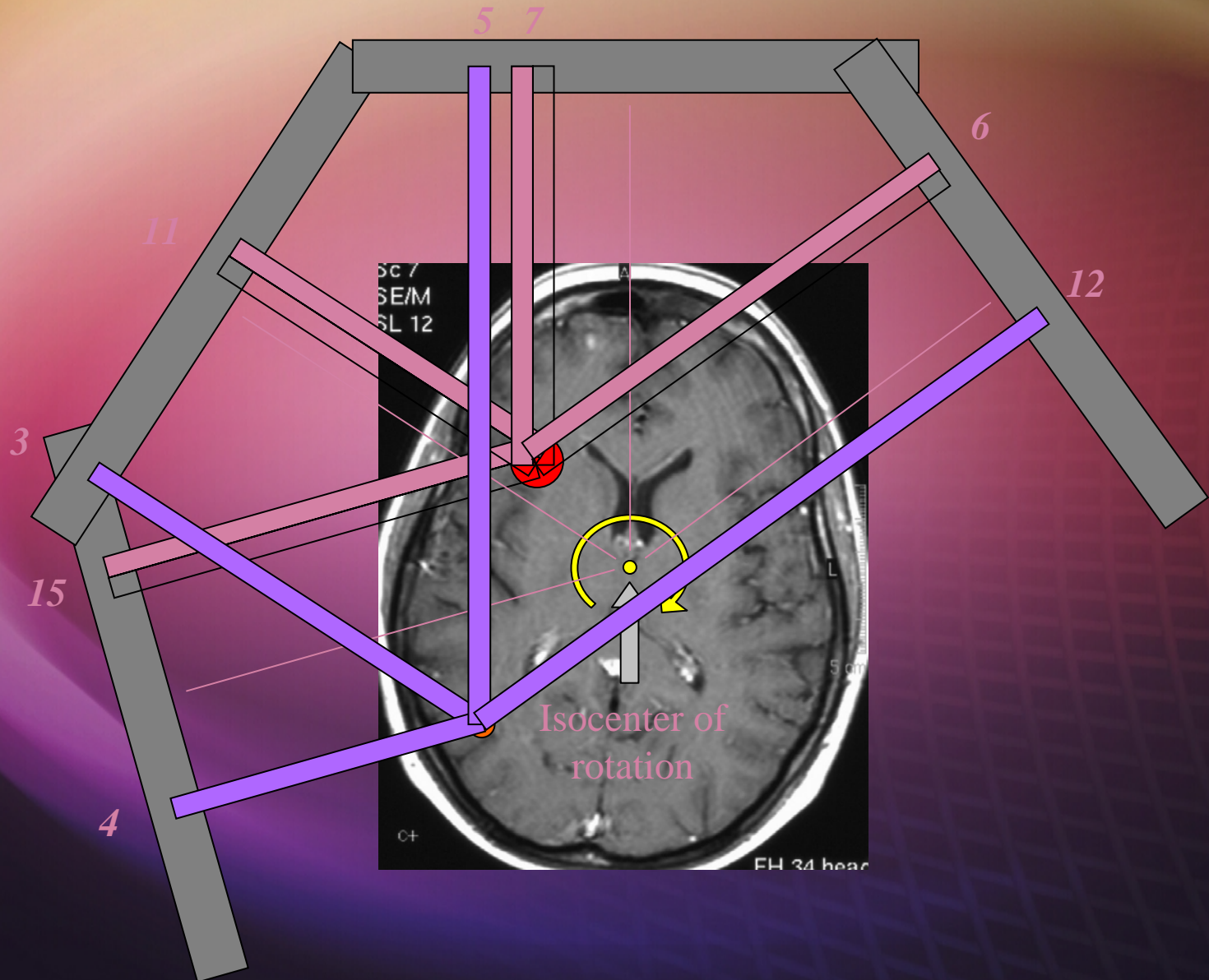
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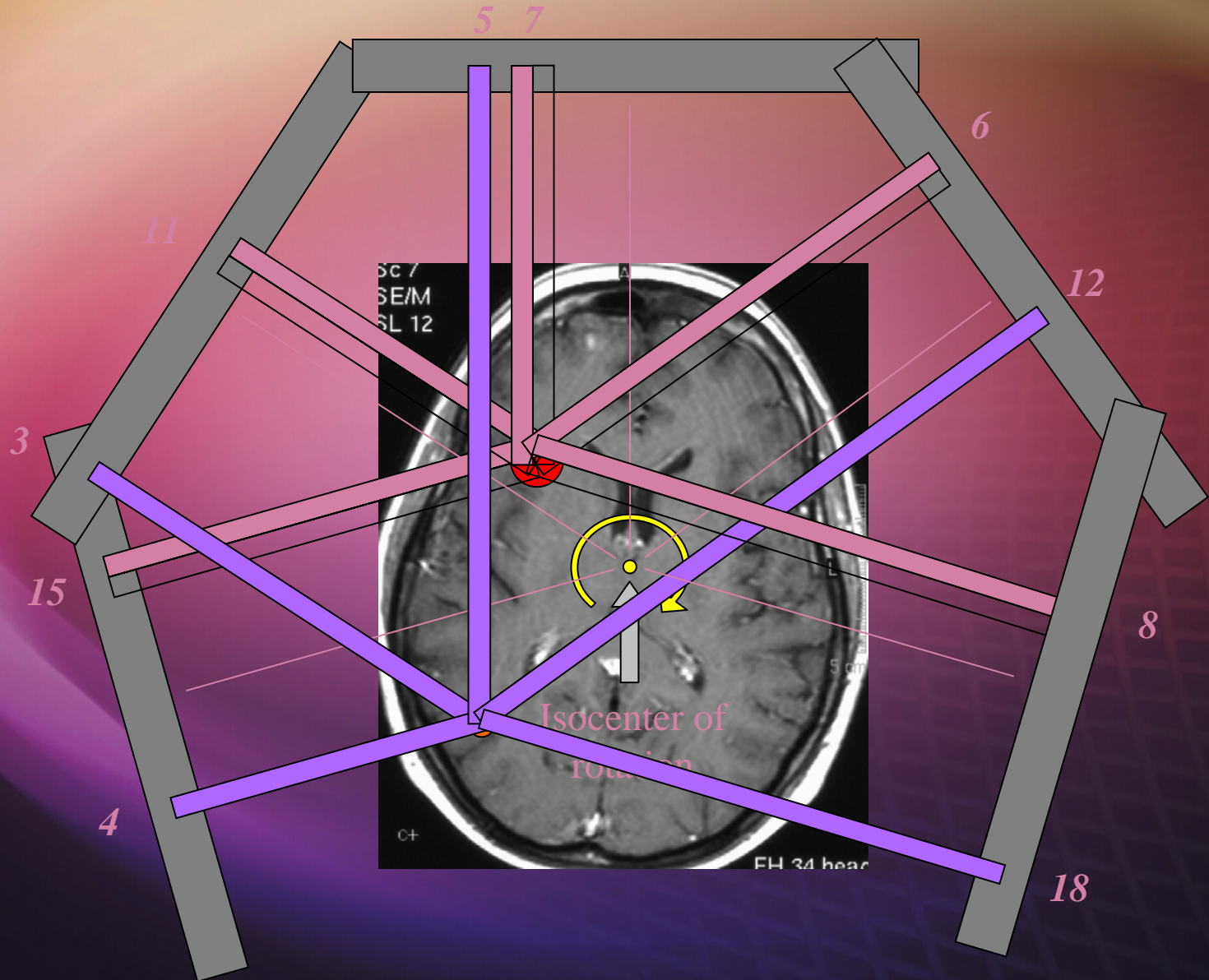
Peacock MIMiC IMRS

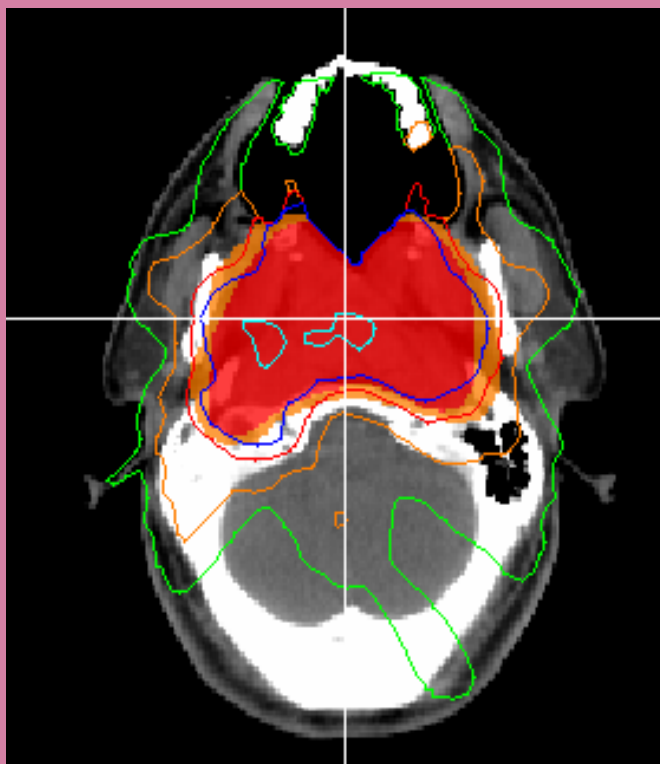


Peacock MIMiC IMRS

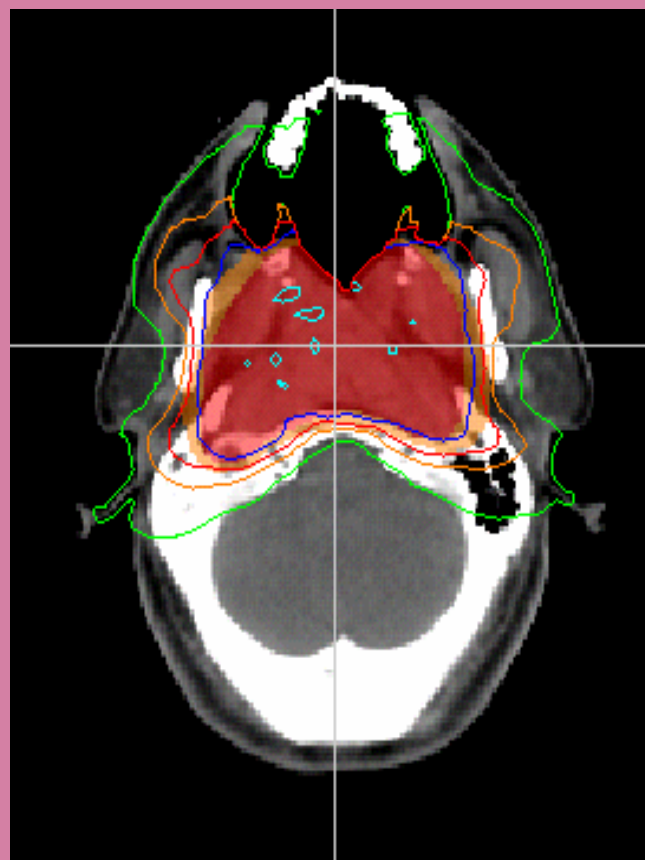


Same amount of time for 1 or 2 lesion





MLC_IMRT



MIMiC Plan

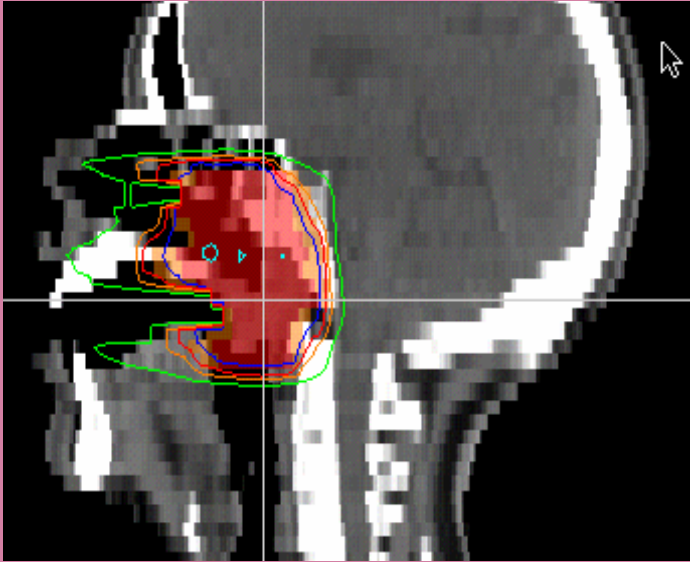
85Gy

70Gy

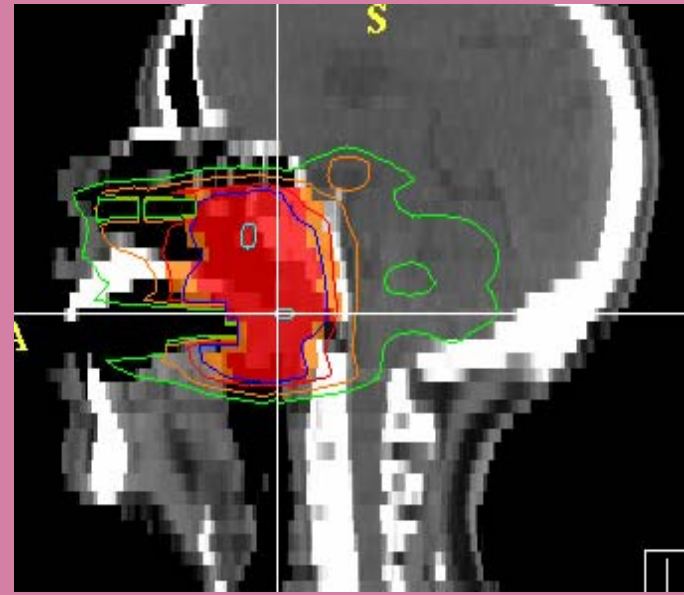
60Gy

50Gy

30Gy



Peacock Plan



MLC_IMRT

85Gy

70Gy

60Gy

50Gy

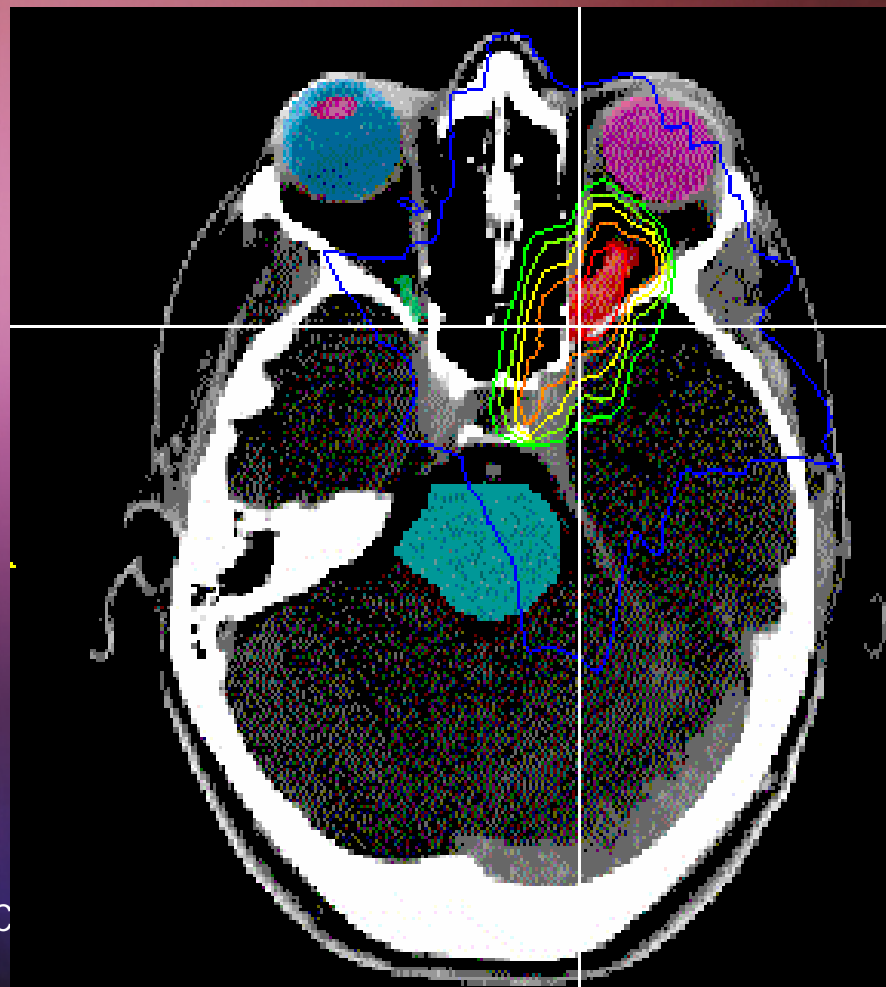
30Gy

north american — SCIENTIFIC

MIMiC

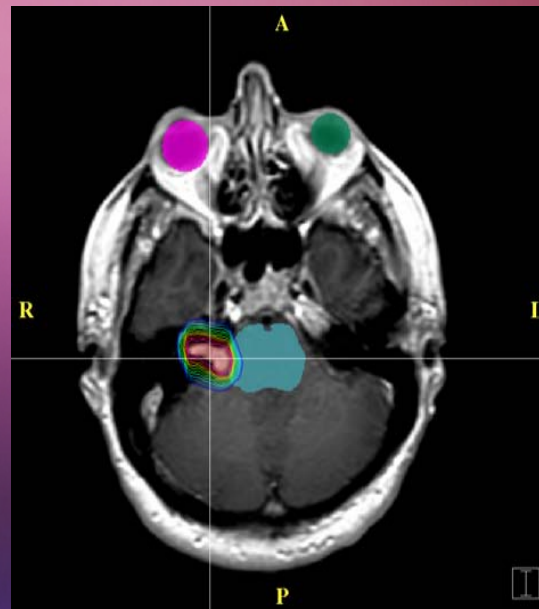
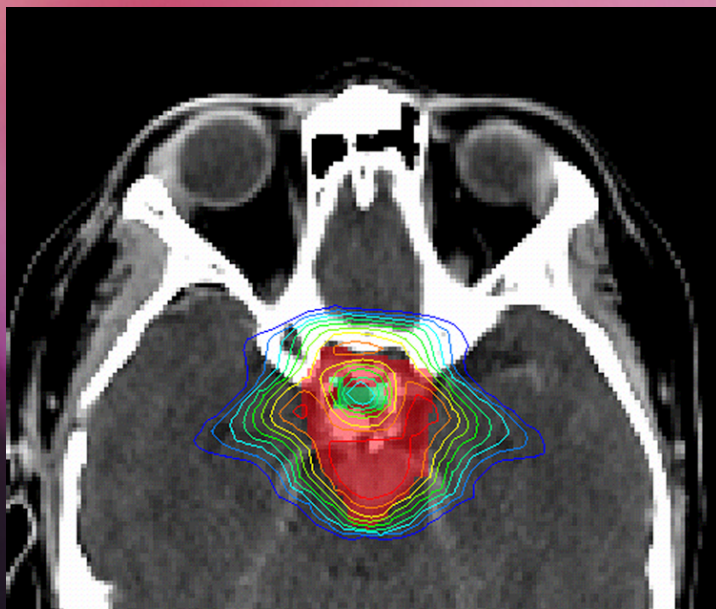


MLC



north american — SCIENTIFIC

Clinical benefits: PEACOCK®



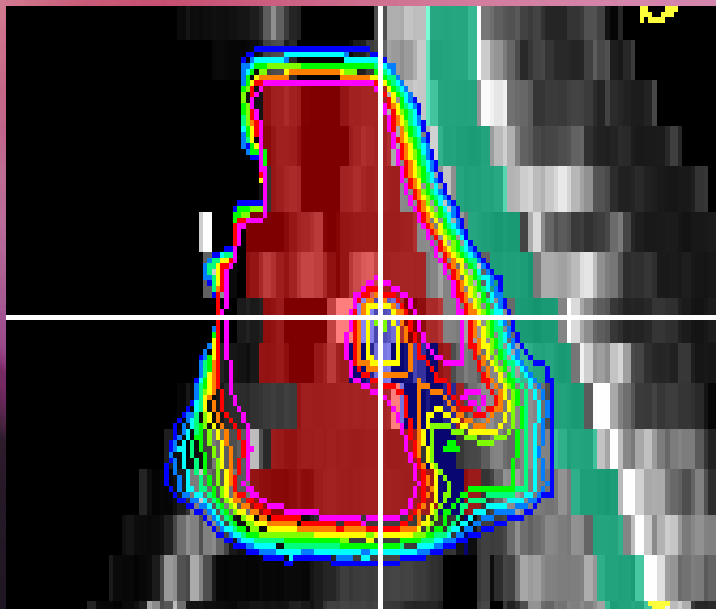
Laryngioma encompassing

Acoustic neuroma contacting

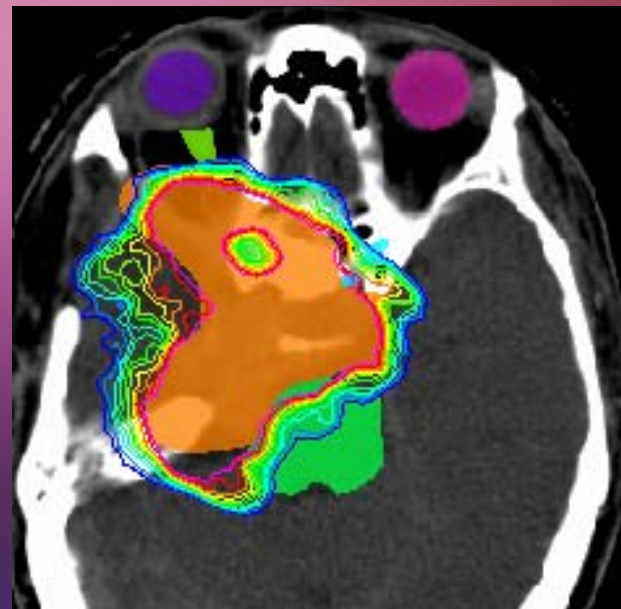
brain stem

north american SCIENTIFIC

Clinical benefits: PEACOCK®



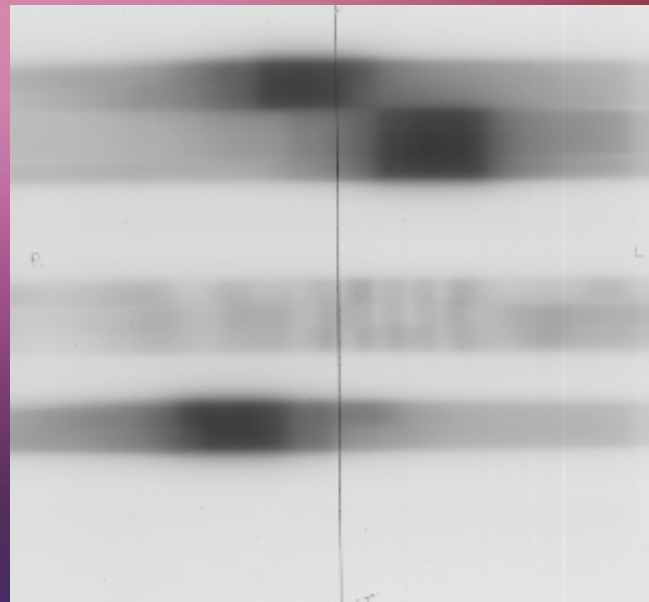
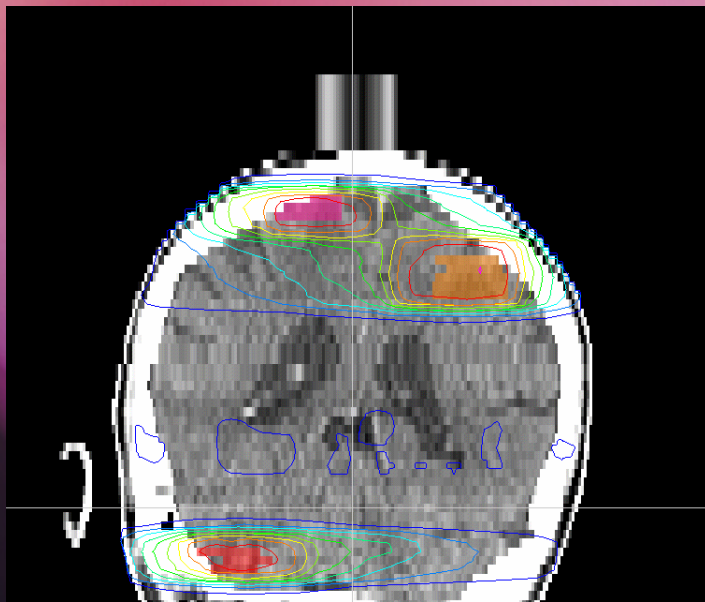
Large central mass with sparing of
optic chiasm



Meningioma with sparing of
optic nerve

north american SCIENTIFIC

Clinical benefits: PEACOCK®

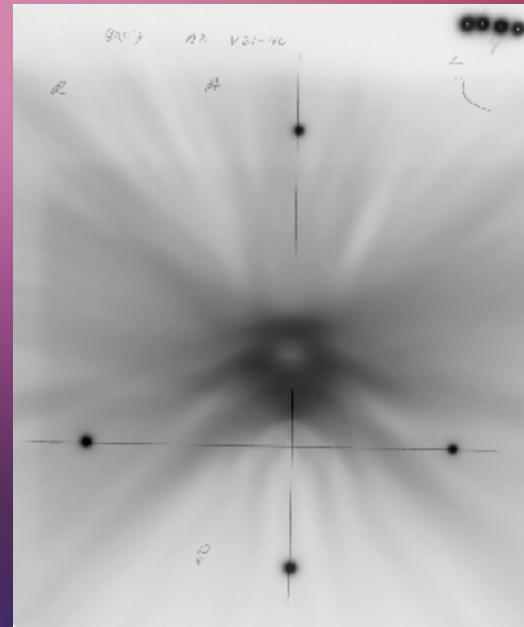
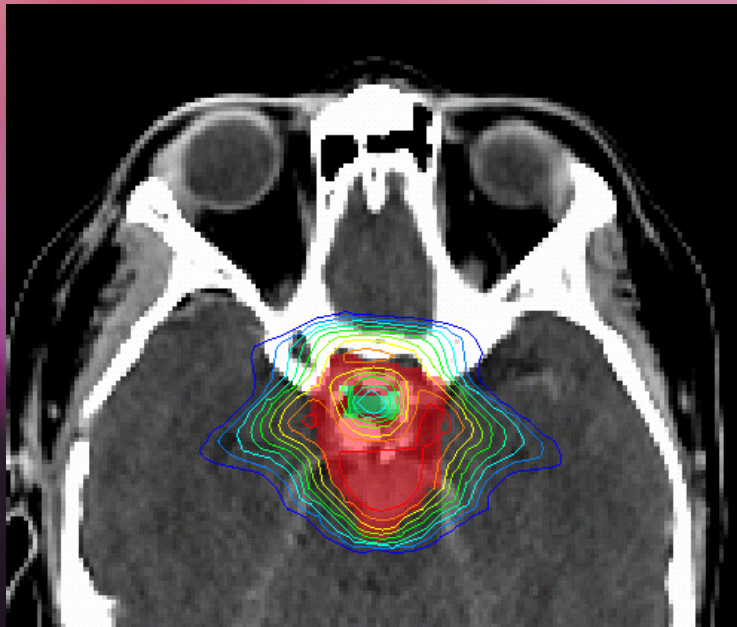


case study

NOMOS PEACOCK slide #1

north american — SCIENTIFIC

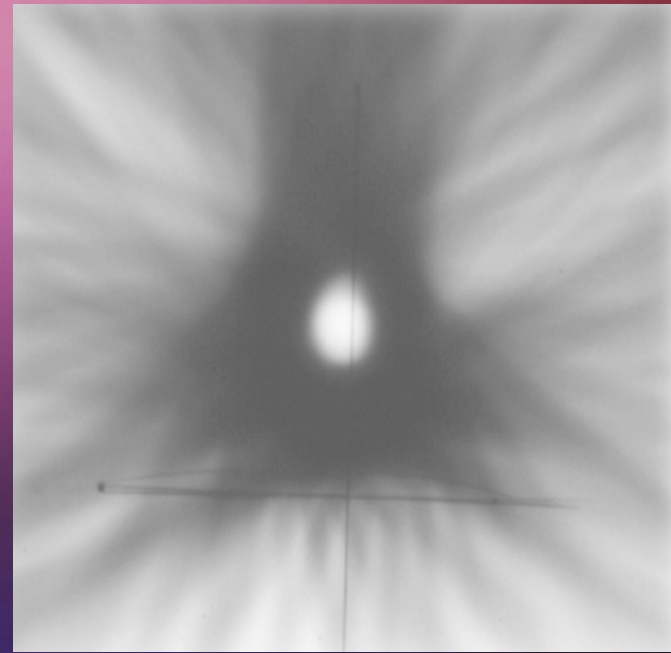
Clinical benefits: PEACOCK®



case study

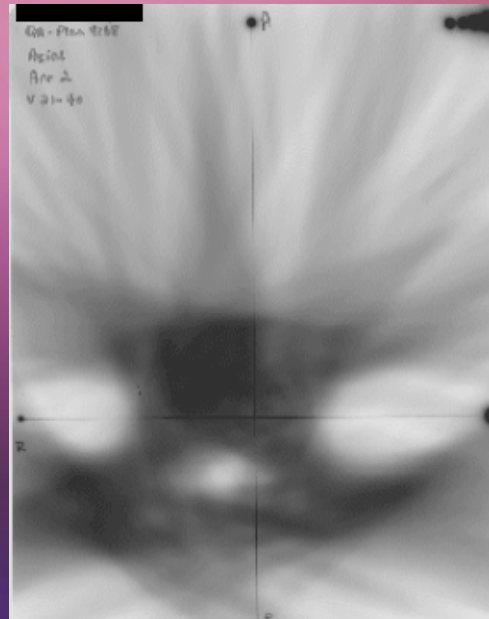
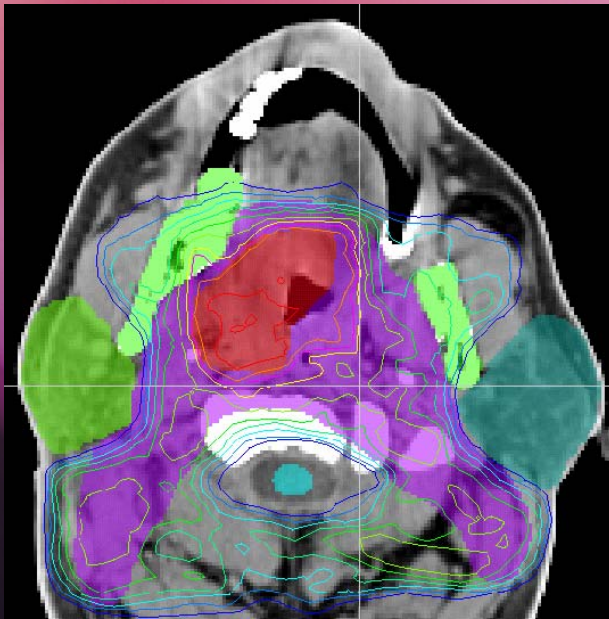
NOMOS PEACOCK slide #1

Clinical benefits: PEACOCK®



north american — SCIENTIFIC

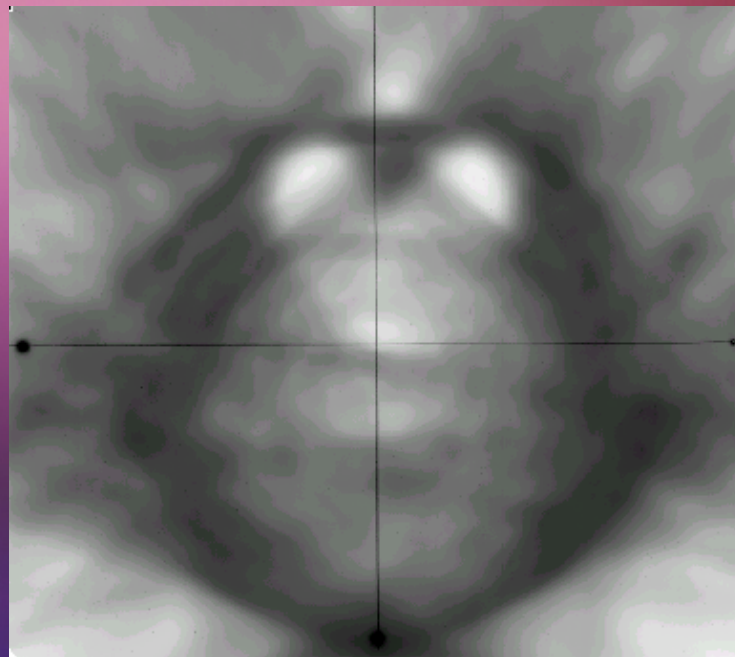
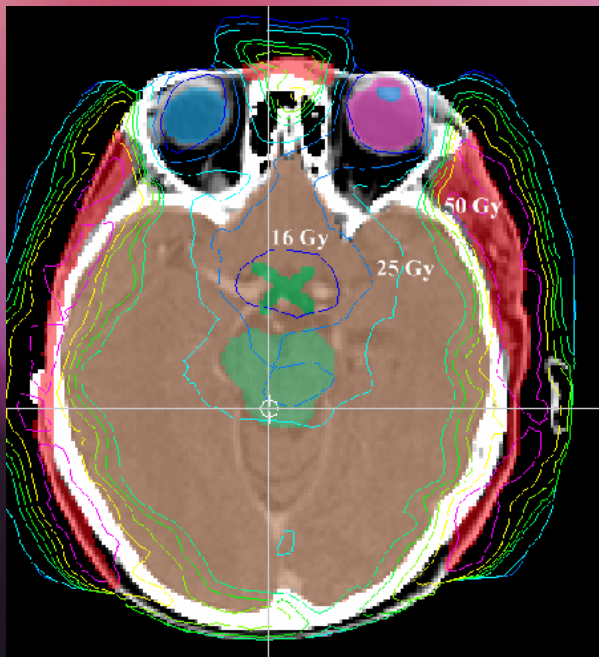
Clinical benefits: PEACOCK®



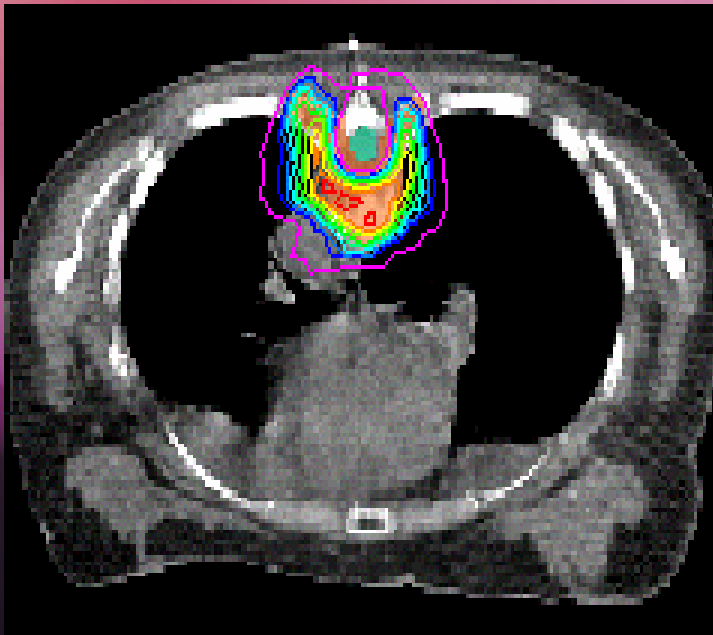
Case study

NOMOS PEACOCK slide #1

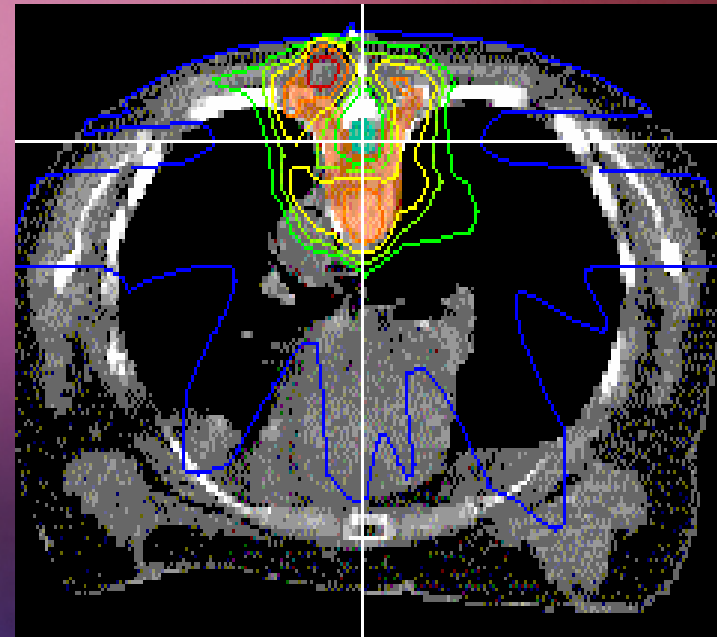
Clinical benefits: PEACOCK®



Clinical benefits: PEACOCK®



®



MLC

NOMOS PEACOCK slide #1

Molte Grazie

Any questions???